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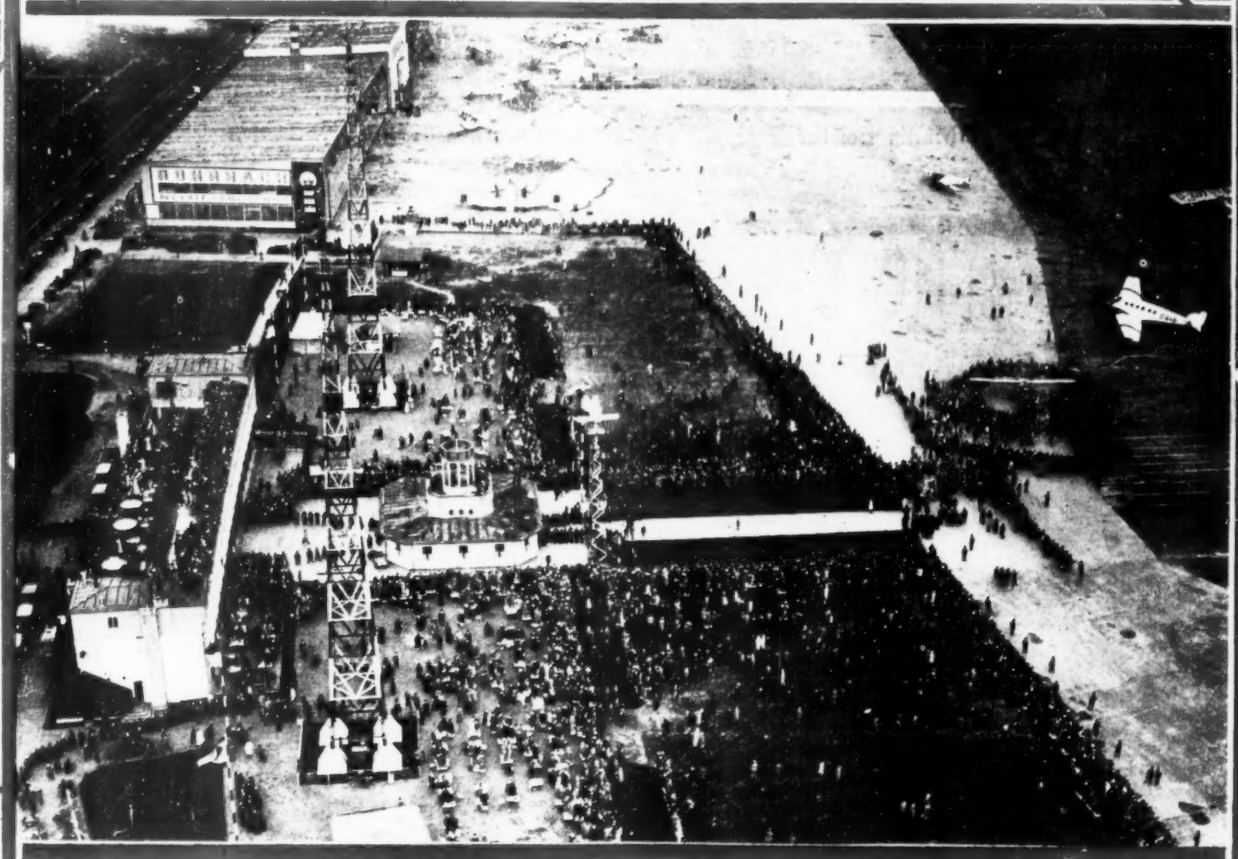
AVIATION

The Oldest American Aeronautical Magazine

JUNE 27, 1927 Issued Weekly PRICE 15 CENTS



German Crowds Greeting the Columbia at the Tempelhof Flying Field

VOLUME XXII

NUMBER 26

SPECIAL FEATURES

THE HISTORY OF THE COLUMBIA
THE PITCAIRN FLEETWING DE LUXE
ADVERTISING AND SELLING AIRPLANES

AVIATION PUBLISHING CORPORATION
Editorial and Business Offices
250 WEST 57 STREET, NEW YORK
Publication Office
HIGHLAND, N. Y.

Entered as Second-Class Matter, Nov. 22, 1920, at the Post Office, at Highland, N. Y. under Act. of March 3, 1879

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The Columbia leaving Long Island on its record-breaking flight from New York to Germany.

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MR. G. M. BELLANCA, designer of the world-famous Columbia monoplane, fully realized the necessity of using only the *finest* materials in building his great plane. This realization was the reason behind his choice of *Dartmouth-Tex* aero cloth. Mr. Bellanca's design and his demands in the matter of materials have been more than justified in the splendid achievements of the Columbia.

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Where others have lost ground, Waco has forged ahead; where others have gained slightly, Waco success has swept it far into the lead.

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Business and Editorial Offices:—250 W. 57TH ST., NEW YORK
Cable Address:—AEROENG
Publication Office:—HIGHLAND, N. Y.

EARL D. OSBORN, *President and Editor*
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Vol. XXII JUNE 27, 1927 No. 26

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Subscription price: Four dollars per year. Canada, five dollars. Foreign, six dollars. Single current copies, fifteen cents. Back numbers, 25 cents. Advertising rates on application.

Issued every Monday. Forms close ten days previously. Entered as second-class matter Nov. 22, 1920, at the Post Office at Highland, N. Y., under act of March 3, 1879.

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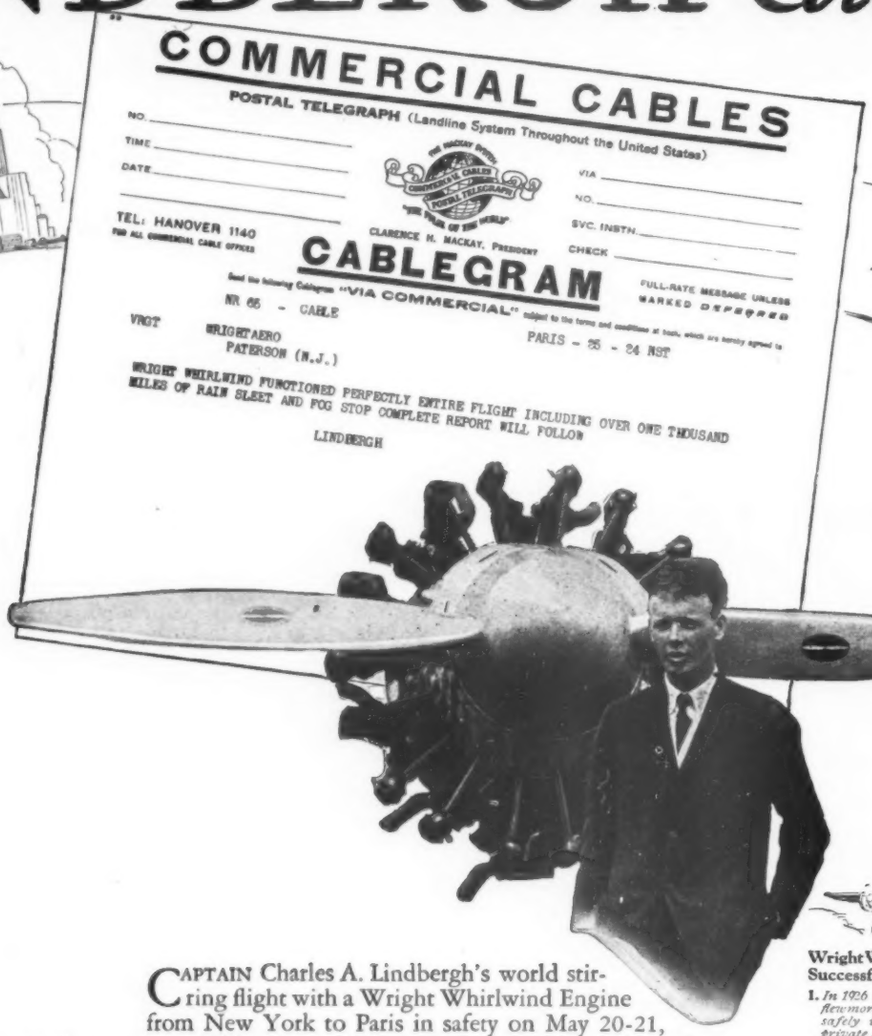
With the Editor

By the time this issue of AVIATION reaches its readers some twenty odd airplanes of various sizes and capacities will have taken off from the Ford Airport at Detroit to begin the 3800 mile reliability tour about the country that calls for stops at twenty cities en route.

The event is known as the Third National Air Tour and although the pilots will compete for $12,000 in cash prizes and the Edsel Ford Reliability Trophy the great objective will be, as in the past two years, to demonstrate to the American people that commercial flying is not a myth but an actuality, that it is safe, that it can be conducted on a regular schedule, and that its future progress depends to a great extent upon the man in the street.

It is highly probable that the success of this year's tour will eclipse the success of the other two if for no other reason than the fact that at no time in the history of aeronautics has public interest been so aroused as it is at present. However, the increased number of miles that will be flown this year and the greater number of cities that will be visited will offer more people the opportunity to vision for themselves the development of aviation in this country.

LINDBERGH *Cabled*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WRIGHT WHIRLWIND FUNCTIONED PERFECTLY ENTIRE FLIGHT INCLUDING OVER ONE THOUSAND MILES OF RAIN SLEET AND FOG STOP COMPLETE REPORT WILL FOLLOW
LINDBERGH

CAPTAIN Charles A. Lindbergh's world stirring flight with a Wright Whirlwind Engine from New York to Paris in safety on May 20-21, 1927, is but the culmination of a remarkable series of aeronautical successes and records covering the past three years.

It is significant, too, that the planes of all three Transatlantic Flight aspirants—Byrd, Chamberlin and Lindbergh—were powered with Whirlwinds, proof positive that the faith of America's greatest airmen was pinned to the safety of America's greatest air-cooled aeronautical engine.

Wright Whirlwind Engines have been the inspiration of a vast majority of the most efficient, safe plane designs in the air today.

Send for Bulletin 17G an interesting, non-technical booklet showing twenty-eight of America's leading, safe airplanes powered with Wright Whirlwind Engines.

Wright Whirlwind Engines are in use on 11 of the most important United States air mail routes and fly more mileage per day in safety with United States mail than the distance between New York and San Francisco.

Wright Marine Engine Successful Performances

Wright Typhoon Marine Engines hold a high place in the light cruiser and express runabout marine field.

1. *1924, won first and second place in the Annual Gold Cup Regatta, Detroit, Mich.*
2. *1925, express runabout "Teaser" beat the Empire State Limited from Albany to New York establishing a record of 2 hours and 40 minutes for this trip.*
3. *1926, runabout "Imp" was timed for the fastest lap ever made in the Gold Cup Races at Manhassett Bay, N.Y.*

Wright Whirlwind Engine Successful Performances

1. *In 1926 Whirlwind Engines flew more than 1,750,000 miles safely in commercial and private airplanes.*
2. *All Whirlwind Engines finished with a perfect score in the (Ford) Annual Reliability Tour, 1925.*
3. *Carried Commander Richard Byrd over the North Pole and back in a Fokker three Wright Whirlwind engined plane, 1926.*
4. *Won first, second and third place in 2550 mile (Ford) Annual Reliability Tour, 1926.*
5. *Established new World's Endurance Record of 51 hours, 11 minutes and 20 seconds in a Wright-Bellanca plane, Chamberlin and Acosta, pilots, 1927.*
6. *Powered Captain Lindbergh's Ryan Monoplane in his nonstop flight from New York to Paris, 1927.*
7. *In 1926 Whirlwind Engines flew more than 2,000,000 miles in the service of the U.S. Navy.*

RELIABILITY—DURABILITY—ECONOMY

WRIGHT

AERONAUTICAL CORPORATION *Paterson, N. J., U. S. A.*

AVIATION

The Oldest American Aeronautical Magazine

VOL. XXII JUNE 27, 1927 No. 26

Both Are Good

EVER SINCE Charles A. Lindbergh and Clarence D. Chamberlin took their respective planes off Roosevelt Field and hours later landed them on European soil the aeronautical world and the man in the street have been making all sorts of comparisons and assertions. Some may be right and some are undoubtedly wrong as well as being unfair and biased. However, after reviewing the two flights from all angles it does not seem that comparisons as regards the personnel or machines are in order. Rather than pick out the good and bad points of the two performances it would be better to look upon them as the second and third steps in the evolution of non-stop trans-Atlantic flying. Considering of course, that Alcock and Brown's accomplishment was the first.

The "Spirit of St. Louis" was not ordered, designed and built with the idea of it being piloted to Germany, Austria, or any place else, except Paris. When Charles A. Lindbergh gave the order to the Ryan Airlines, Inc., he stipulated that he wanted a plane to carry him to Paris. He got the plane in sixty days and a short time later made the flight. Thus he accomplished to the letter all that he had set out to do.

The Bellanca "Columbia" was not designed with the sole idea of it being flown to Paris. It was an improvement of Mr. Bellanca's other models. It represented the acme of his airplane designing ability thus far. Had it been taken off for Paris before the Spirit of St. Louis it would now be regarded as the second step in the evolution of trans-Atlantic flying instead of the third, no more, no less. However it did not, and therefore it was only natural that its pilot should strive to fly it beyond the French capital and further prove its utility and aeronautical advancement by carrying a passenger. The Columbia did not go the Spirit of St. Louis one better for, regardless of the much touted air race to Paris, when the wheels of each machine eventually left the ground each pilot had a definite goal to head for. And history proves that the goals were reached and the individual feats accomplished.

Therefore, why compare things that are not to any great degree comparable? Charles A. Lindbergh flew alone to Paris and proved to the world that Europe was within the non-stop range of a single engined plane. Clarence D. Chamberlin flew to Europe with a passenger and proved that flying to Europe held great commercial possibilities. And if Commander Byrd succeeds in flying his three engined Fokker to Paris he will not take one iota of glory from Lindbergh or Chamberlin, but instead will prove that the American aeronautical industry can build airplanes capable of carrying four human beings across the broad expanse of the North Atlantic, and thus become the fourth step in the evolution of trans-Atlantic flying.

Trend of Commercial Flying

THE DIFFERENCE between the character of commercial aviation in Europe and the United States is that in Europe the civil air activity is almost entirely in the nature of air transport lines operating on fixed schedules, while in the United States it is in the nature of localized operations by numerous independent units, except for our air mail contract lines, which are just beginning to come into importance.

When one considers the political background of aviation here and abroad, as is evidenced by the nature and extent of governmental support, the reason for this difference in the development of commercial flying becomes apparent. The establishing of air transit lines on a regular schedule is a costly undertaking. A heavy outlay for the ground and flying equipment is required. Direct operating expenses, until the lines reach a self-sustaining point, are also very large, and the long and patient campaign necessary to build up traffic of a character that will pay the rate for swift air transit calls for no small expenditure. Capital will not invest millions in a new transportation scheme on the gamble that the untried scheme may pay dividends. Some measure of steady income must be in sight. In Europe this situation is met by a direct cash subsidy that takes care of a substantial part of the operating costs.

In the United States there is no subsidy and the entire burden must be carried by the backers of such a venture. Until the Post Office Department was authorized by law to enter into contracts with privately operated lines for carrying mail over certain routes every pound of air traffic had to be created by the sole effort of the air line itself. The probable outcome was too problematic to interest capital. But the minute the postal service was placed in a position to aid lines in developing traffic, men were found to take a chance and the beginnings were made of what promises to be a great system of air transport lines.

Until it was possible to obtain mail contracts, it was not to be expected that the trend of commercial flying in the United States would be toward the costly undertaking of air transport operating on fixed schedules as it has been in Europe, where substantial subsidies are paid direct to operating lines by the government.

The History of the Columbia

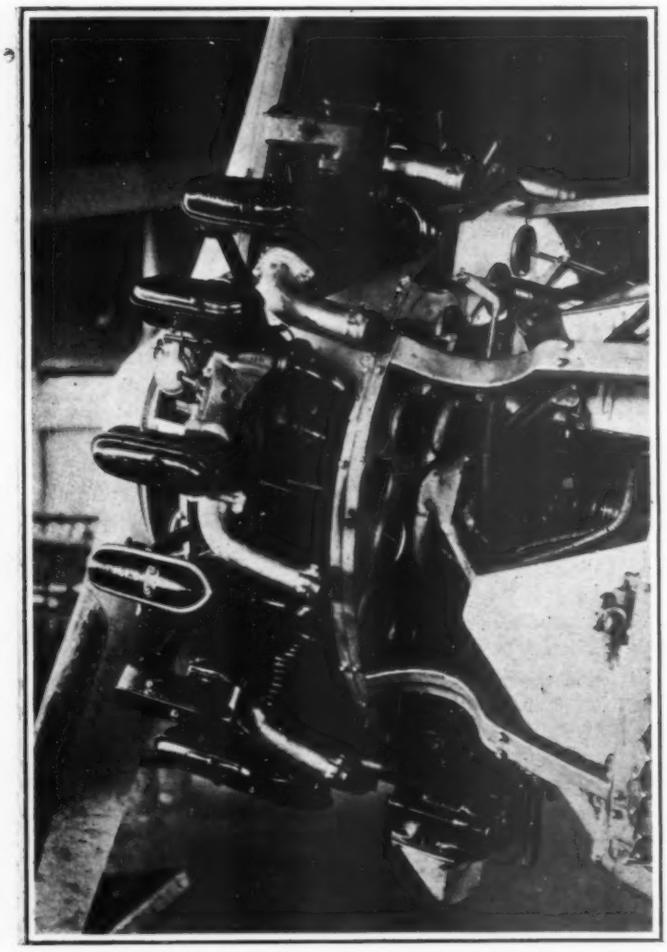
Facts and Figures on the Construction, Performance And Records of the New York to Germany Plane

THE COLUMBIA, the latest of the Bellanca models, has made an enviable record. After its first test flight, it was hailed in the aeronautical press as a commercial plane in a class by itself. In the New York Air Races of 1925 it won the Light Efficiency Trophy donated by the Aviation Town and Country Club of Detroit with a score of 602 points against the 394 points of its nearest competitor. In the same event it was second only in speed to a plane specially prepared for racing.

In the National Air Races at Philadelphia in 1926 it captured three out of four possible first prizes in the two events in which it was entered. In the contest for the Aviation Town and Country Club of Detroit Trophy for light commercial planes, it won first place in efficiency by carrying 1,145 lb. ballast at 121.36 m.p.h. In the contest for the Detroit News Air Transport Trophy, for commercial planes of large load carrying capacity, it carried 1,607 lb. ballast at an average speed of 121.28 m.p.h., winning first prize both for efficiency and for speed, having over double the points of its nearest competitor.

The plane was completed in Sept. 1926 at the factory of the Wright Aeronautical Corp. at Paterson, N. J. Early this Spring the machine was acquired by the Columbia Aircraft Corp. and was in the possession of that company when it broke the world's endurance and distance records.

The Columbia is the last of a series of three planes built along almost exactly the same lines, the first being built by the Roos-Bellanca Co. of Omaha, Neb., in 1922. In design it was the first in the United States of a now rapidly growing group of semi-cantilever high-lift monoplanes, characterized by complete cabin enclosure for passengers and pilot, by a fuselage of large section giving ample space and carrying capacity, by a divided landing gear with the wheels wide apart, and by high performance and efficiency.



The installation of the Wright Whirlwind engine on the Columbia.

"While the trans-Atlantic flights of the last few weeks do not demonstrate anything that was not deemed possible before, they have awakened the interest of the world to Aeronautics. Theoretically, such flights have been possible for the past few years. The public is now convinced that they are possible. For that reason I believe that Aviation will take enormous strides in the immediate future. Great credit is due to Lindbergh and Chamberlin, the pilots on the flights.

"We are glad to have contributed to such an enterprise. Public interest in Aviation will stimulate aircraft design and engineering and American designers and engineers may be relied upon to meet the requirements of more reliable and efficient aircraft."

G M Bellanca

In its design, every consideration has been given to the comfort and convenience of the pilots and passengers. There is no separate pilot's cockpit, the pilot occupying the first seat on the port side. The cabin is heated with warm fresh air from the stove on the exhaust manifold.

The fuselage, of welded chrome-molybdenum steel tubing, is divided into three sections. The forward section consists of a simple, light, and rugged engine mount. The engine mount, carrying the Wright Whirlwind, weighs 13½ lb. It is hinged to the fuselage in such a way that the engine, oil tank, and cowling all swing together.

Side by Side Dual Control

The center section, which includes the cabin, is built up of a double warren truss with no members crossing the fuselage, leaving a clear unobstructed cabin. The tail section of the fuselage is braced with wire. The controls are dual side by side and the window arrangement is such to give the pilot and passengers excellent vision. The instruments include the conventional tachometer, altimeter, engine gages, switch, bank and turn indicators, drift indicator, watch, air speed meter, lateral and longitudinal inclometers, in addition to the earth inductor and magnetic compasses.

In the cabin were carried such accessories as Very Pistols, flares, smoke bombs, life raft, food, etc. The smoke bombs were to be used as point of reference for measuring the drift or the wind direction in case of a forced landing. They could be used either at night or day.

The wing is constructed of wood, wire and fabric, in two sections, which are pin-jointed to the fuselage at the upper longeron so that no center section is required. The wing beams are of routed spruce giving an I section.

The ribs are constructed of spruce, balsa, and lata-bass wood giving a warren truss. The cap-strips are spruce while the trussing is built up of bass and lata-balsa wood. This

type of rib has been tested to over 800 lb. before breaking. For a load factor of seven only a 375 lb. test load is required. Their weight is 12 oz. each, all ribs are identical with the exception of two, namely, the wing tip ribs which, one each side, taper towards the cap-strip. The wing covering is fabric covered, protected by six coats of dope and two of varnish.

The famous Bellanca lifting struts extend from the lower fuselage longeron to a point at two thirds the semi-span of the wing. They are of double cambered section, being built up with a single solid spruce I section member, the ribs being employed to give the airfoil section.

The Bellanca struts have a maximum chord at the fuselage and are tapered down to a few inches at a point below the wings. Connecting this point to the wing the beams are two steel tubes forming a triangle, with a section of the wing beam as one side. At this connecting point the forward and rear Bellanca struts are joined by a steel tube. This trussing is very rigid, being braced with wires.

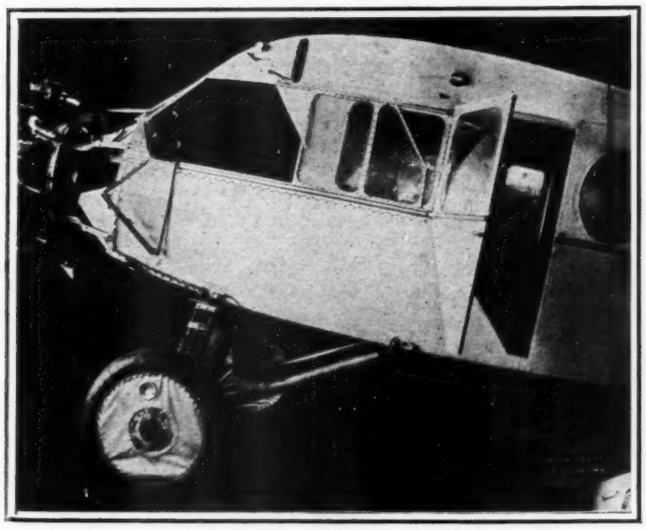
The resistance of the Bellanca struts is no more than the normal type strut while their lift more than compensates for their weight. Furthermore, their marked dihedral adds considerably to the stability of the plane. The struts were designed with the load factor of ten.

Fuel Tank at Stub of Each Wing

The tail section of the fuselage is attached to the cabin section by means of four pins. The empennage is constructed of spruce and bass, fabric covered, doped and varnished. The elevators are unbalanced while the rudder, of ample size, is balanced. The stabilizer is adjustable to compensate for changes in the weight distribution.

The landing gear is of chrome-molybdenum steel tubing with rubber shock absorbers. It is of the split axle type and well streamlined. The "trousers" on the 1925 model have been eliminated. A tail skid of birch, is mounted entirely outside of the fuselage facilitating replacement.

There is a fuel tank at the stub of each wing having a capacity of 32 gal. each. For the long flights a large additional tank of 326 gal. was placed in the fuselage. This tank is divided into two parts by a partition. Baffel plates



Side view of pilot's cockpit, and cabin on the Columbia, with the wings off.

and stiffeners divide the large tank in the numerous cells. On the trans-Atlantic flight, 13 additional cans of gasoline of five gal. each were carried giving a total capacity of 455 gal. All the tanks are of welded aluminum. The fuel system is such that gasoline can be pumped from one tank into another. All fuel comes to the engine from the wing tanks by gravity feed. As either wing tank, or, the engine pump or warble pump may be used, a dual fuel system is obtained. The quantity of gasoline is measured by the side gage on the tank.

Vendors of Materials, Parts and Equipment Used in Manufacturing the Columbia

Ohio Seamless Tube Co. 100 E. 45th Street, New York, N. Y.	Molybdenum steel tubing and Carbon steel tubing for Fuselage framework and landing gear.
Stewart Hartshorn Co., 250 Fifth Ave., New York, N. Y.	Streamline wire, Round swaged wire, and wire fittings for Bracing of fuselage, wing and control surfaces.
W. Harris Thurston & Co., 116 Franklin Street, New York, N. Y.	Fabric covering of entire plane.
Aero Supply Mfg. Co., 22nd St. & 3rd Ave., College Point, L. I.	Bolts, nuts, screws, rivets, turnbuckles, clevises and other hardware.
Aluminum Co. of America, 17 Academy Street, Newark, N. J.	Sheet aluminum, tanks and cowling Sheet dural,—tank straps and cowling formers.
John A. Roebling's Sons Co. of New York, Trenton, N. J.	Control cable.
Balsa Wood Corp., 331 Madison Ave., New York, N. Y.	Balsa wood fairing.
Perry Austen Mfg. Co., Grasmere, Staten Island.	Dope, acetate and nitrate.
Valentine & Co., 456 4th Ave., New York, N. Y.	Varnish.
Crucible Steel Company of America, Corner Dominick & Clark Sts., New York, N. Y.	Molybdenum sheet steel, all fittings.
The Russell Mfg. Company, Middletown, Conn.	Shock absorber cord.
Dayton Wire Wheel Company, Dayton, Ohio.	Wheels.
B. F. Goodrich Rubber Co., Akron, O.	Tires.
U. I. Hungerford, Brass & Copper Co., 80 Lafayette St., New York, N. Y.	Copper tubing, oil and fuel lines.
U. S. Rubber Co. 1790 Broadway New York, N. Y.	Hose.
Parker Appliance Co., 10320 Berea Rd., S. W., Cleveland, O.	Oil side pipe fittings.
Lunkenheimer Co., 129 Lafayette St., New York, N. Y.	Fuel pipe fittings.
Charmette Co., Inc., 47 W. 42nd St., New York, N. Y.	Non-inflammable charmoid window material.
D. Kchnweiler, 20 Dover St., New York, N. Y.	Seats and Cushions.
New Jersey Veneer Co., Paterson, N. J.	Veneer for seats, lift struts, wings.
Carpenter Steel Co., Reading, Pa.	Nickel steel for eye bolts and landing gear fittings.
Steel & Conduit Inc., 74 Pearl St., New York, N. Y.	Manganese steel casting for tail skid shoe.
Pioneer Instrument Co., 754 Lexington Ave., Brooklyn, N. Y.	Flight Instruments
The Moto Meter Co. 15 Wilbur Ave., Long Island City, N. Y.	Moto Meter
Consolidated Instrument Co., 41 E. 42nd St., N. Y.	Tachometer (Jones)
The American Oil Co. Baltimore, Md.	Gasoline (Amoco)
The Pennsoil Co., Oil City, Pa.	Oil (Pennzoil)
2 Scintilla Aircraft Magnetos, model AG-9D, made by Scintilla Magneto Co., Inc., Sidney, N.Y.	Magnetos
Stromberg Motor Devices Co., 58 E. 25th St., Chicago, Ill.	Carburetor
A. G. Spark Plug Co., Flint, Mich.	Spark Plugs

The general details of the plane are:

Span	46 ft. 6 in.
Length	26 ft. 9 in.
Height	8 ft. 9 in.
Wing chord	6 ft. 7 in.
Wing area	272 sq. ft.
Weight empty	1850 lb.
Weight of pay load (trans-Atlantic flight)	3600 lb.
Weight loaded (trans-Atlantic flight)	5450 lb.
Weight per horsepower	24.4 lb.
Weight per square foot	20.0 lb.
High speed—1200 lb. pay load	130 m.p.h.
High speed—1025 lb. pay load	130 m.p.h.
Cruising speed—1025 lb. pay load	110 m.p.h.
Landing speed—1025 lb. pay load	46 m.p.h
Climb—1025 lb. pay load	930 ft. in 1 min.
Glide ratio—1025 lb. pay load	12½ to 1.
Horsepower of Whirlwind at cruising speed	125 hp.
Fuel consumption (trans-Atlantic flight) at 97 m.p.h.	10¾ mi. per gal.
Fuel consumption at 110 m.p.h.	10 mi. per gal.

Wright Whirlwinds Have Played Important Parts in Making Aeronautical History

Have Proved Merit at National and Local Air Races and Reliability Tours as Well as on Famous North Pole and Trans-Atlantic Flights

NOWHERE in history has any mechanical device shown such a tenacious singleness of purpose to perform as that exhibited by the Wright Whirlwind engine. Out of the rush and welter of a world conflict came the clear eyed, clear visioned procedure of a typical American manufacturing organization—to build and refine, redesign and rebuild, until every experience, every advantage was incorporated within an engine that has shown perfection in its performance. Tests and more tests, trials and more trials and the feat of men leaving the west Atlantic shore and landing on the other seemed more and more feasible. Meanwhile came Byrd's and Bennett's epoch-making trip over the North Pole and back in a Fokker three-engined plane. A sure indication of an engine's performance under the severest weather conditions. A careful overhaul of these three engines showed no weak spot—no tendency to falter in its steady sure performance. After its return to this country the plane successfully completed a 8,600 mi. coast-to-coast tour of the country with the same three Wright Whirlwind engines that carried Byrd and Bennett over the North Pole.

And then, if further proof was necessary, came the breaking of the existing World's Endurance Record by Chamberlin and Acosta in the Wright-Bellanca Monoplane at Roosevelt Field, L. I. on April 14 with the astounding sustained performance of 51 hr., 11 min., 25 sec., beating out by more than six hours the old world's record of 45 hr., 11 min. 59 sec., made on August 7, 1925 by the French fliers Drouhin and Landray in a Farman biplane. Previous to the endurance test flight the same engine in the same plane won three out of four possible first places at the National Air Races at Philadelphia in 1926.

The engine was a stock commercial Wright Whirlwind type J-5C, taken from the regular assembly line last summer. Previous to the endurance test flight it had already done 179 hr. 53 min. in the air, including cross country flying between New York, Chicago, Kansas City, and Dallas, and between New York, Richmond and Atlanta. It had been raced and had been flown on grueling demonstration flights. In breaking the endurance record it ran without a miss for more than 51 hr. without change of oil, without mechanical adjustment—without any of the attention which any engine can expect to have every few hours in ordinary service. As soon as more fuel could be put in the tanks the engine was started and the plane flown.

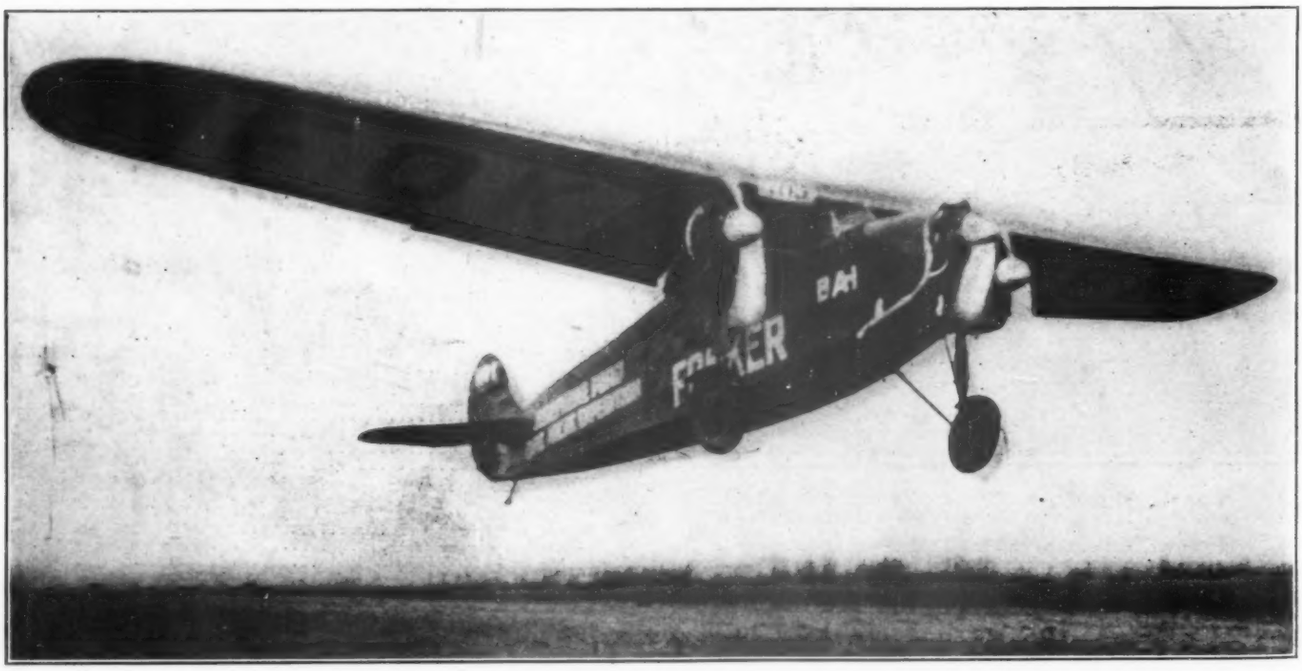
Then to add to this admirable list of performances, the plane with a J-5C engine was flown from New York to Helfta, Germany breaking the world's distance record.

Have Won Many Prizes

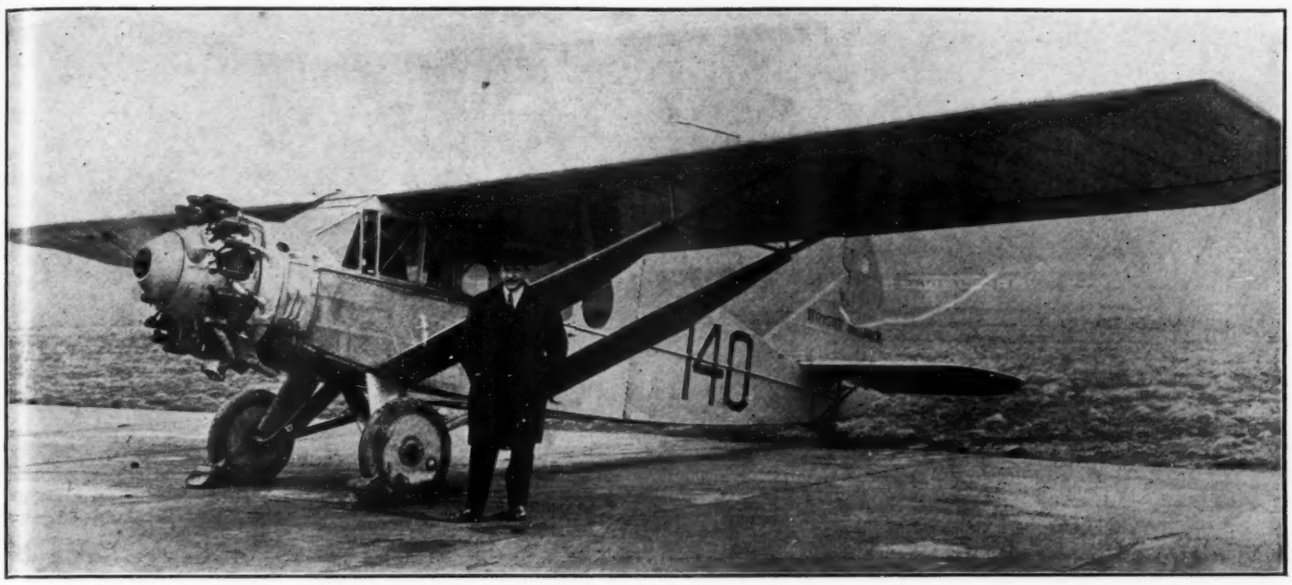
It was only a short time after the Bellanca broke the endurance record that Charles A. Lindbergh made that flight, the memory of which will live forever. Lindbergh's praise for that engine, that carried him from San Diego to New York and then on to Paris in such excellent time, is one of the highest compliments it could receive.

The Whirlwind engine has been used in increasing numbers in commercial planes. In the Second Annual Airplane Reliability Tour of 1926, planes powered with the Whirlwind engine won first, second, and third place, the route being over 2,500 miles long, the planes being Travel Air first with 600 lb. payload, 124.5 m.p.h.; Buhl Airster second with 800 lb. payload, 113.5 m.p.h.; Stinson-Detroiter third with over 640 lb. payload, 106.7 m.p.h.

At the National Air Races held in Philadelphia in 1926 Wright Whirlwinds won the majority of the prizes for which they competed. In the Detroit News Air Transport Trophy



The Fokker plane (3 Wright Whirlwinds) used by Commander Byrd on his North Pole Flight.



Charles L. Lawrance, president of the Wright Aeronautical Corp., and the Bellanca, equipped with the Wright Whirlwind J-5 engine.

Race on 11 September for civilian planes carrying at least 1000 lb. ballast, the Wright Whirlwind engines won first, third and fourth places in the Efficiency Division and first, second and third place in the Speed Division, or five out of the six prizes offered. First place for both Speed and Efficiency was won by the Wright Whirlwind engine in a "Wright-Bellanca" plane, averaging 121.28 m.p.h. with 1607 lb. ballast. Second place in speed was won by a Buhl-Verville "Airster" powered with a Wright Whirlwind engine, piloted by Louis G. Meister, making 119.97 m.ph. with 1059 lb. ballast. This plane also won third place in the efficiency division of the same race. Third place in the speed division was won by the Ford Motor Company's 3-engine Stout airliner powered with three Wright Whirlwind engines, piloted by R. W. Schroeder, making 114.99 m.p.h. while carrying 2666 lb. ballast. This plane also won fourth place in the efficiency division. Mr. Stout announced that they had limited the amount of ballast to a load that could be safely flown by any two of the three engines. The Pitcairn "Fleetwing" powered with a C-6 engine won second place in the efficiency division with a speed of 103.58 m.p.h., carrying 1017 lb. ballast.

Captured Detroit Trophy Race

The Wright Whirlwind engine won the Aviation Town and Country Club of Detroit Trophy Race for light commercial civilian owned planes. The trophy was won by the Wright-Bellanca, making 121.36 m.p.h. while carrying 1145 lb. ballast. The speed division of this race was won by the Pitcairn Arrow with C-6 engine, carrying 361 lb. ballast at 136.37 m.p.h. Casey Jones in an Oriole with C-6 engine won second place in the speed division, carrying 360 lb. ballast at 135.5 m.p.h. Second place in the efficiency division went to the Pitcairn Fleetwing carrying 624 lb. ballast at 100.34 m.p.h. Walter Beech won third place in both speed and efficiency with his Travel Air plane powered with a Wright Whirlwind engine, making 127.2 m.p.h. with 666 lb. ballast. This is the same plane and engine with which Beech won the Second Annual Reliability Tour and it will be noted that this was the only plane that won a place in both the speed and efficiency divisions.

Raced 1716 Miles With No Engine Trouble

In the Free-for-All Race for civilian airplanes, Wright Whirlwinds won four out of the six prizes offered. First place went to Casey Jones with a C-6 Oriole, making approximately 136 m.p.h. The Pitcairn Arrow with C-6 was second. Walter Beech with his Whirlwind powered Travel Air was third. The Wright-Bellanca was fourth. Louis Meister in a Buhl-Verville Airster powered with a Wright Whirlwind was fifth and Henry Dupont flying his Whirlwind powered Buhl-Verville Airster was sixth.

Wright Whirlwind engines raced in all 1716 mi. without any engine trouble whatsoever with the exception of a sticky piston in the engine in a UO-1 plane in one race which caused the plane to fly back to its home field without completing the race. In these three races Wright Whirlwind powered planes won twelve out of eighteen prizes offered.

It is interesting to note that all the American contemplated and completed trans-Atlantic flights selected Whirlwind engines. Abroad the engine is being used in increasing numbers. The Heinkel convertible biplane is equipped with two

(Cont. on page 1449)

Walter Beech, (left) of the Travel Air Mfg. Co., pilot, and Brice Goldsborough, of the Pioneer Instrument Co., with the Pioneer Travel Air (Wright Whirlwind) which won the 1926 Ford Reliability Tour.

Giuseppe M. Bellanca Has Been Designing Successful Airplanes Since 1908

Noteworthy Designs Include the First Tractor Biplane, The Roos-Bellanca and the Record Breaking Columbia

FROM HIS boyhood days Giuseppe M. Bellanca has been interested in aeronautics. While he was a student at Milan (Lombardy) in 1906, he started a series of public experiments in aviation. In 1908 and 1909 in collaboration with E. Bossi and P. Invernizzi he built a two seater pusher biplane using a Zust engine. The plane had its first test flight at the aviation field at Baggio near Milan on Sept. 8, 1909. Later that year he designed the first tractor biplane ever built. It embodied the general characteristics of the modern tractor biplane. In 1910 this plane was constructed and flown at the Aerodrome of Taliedo.

In 1911 Bellanca came to this country. In that year he designed and built a single seater monoplane at Mineola, L. I. After teaching himself to fly on this plane he established The Bellanca Aeroplane School in 1912. For instruction purposes he used a parasol monoplane. Incidently its last public appearance was August, 1921, when it was flown by Clarence D. Chamberlin.

With Maryland Pressed Steel Co,

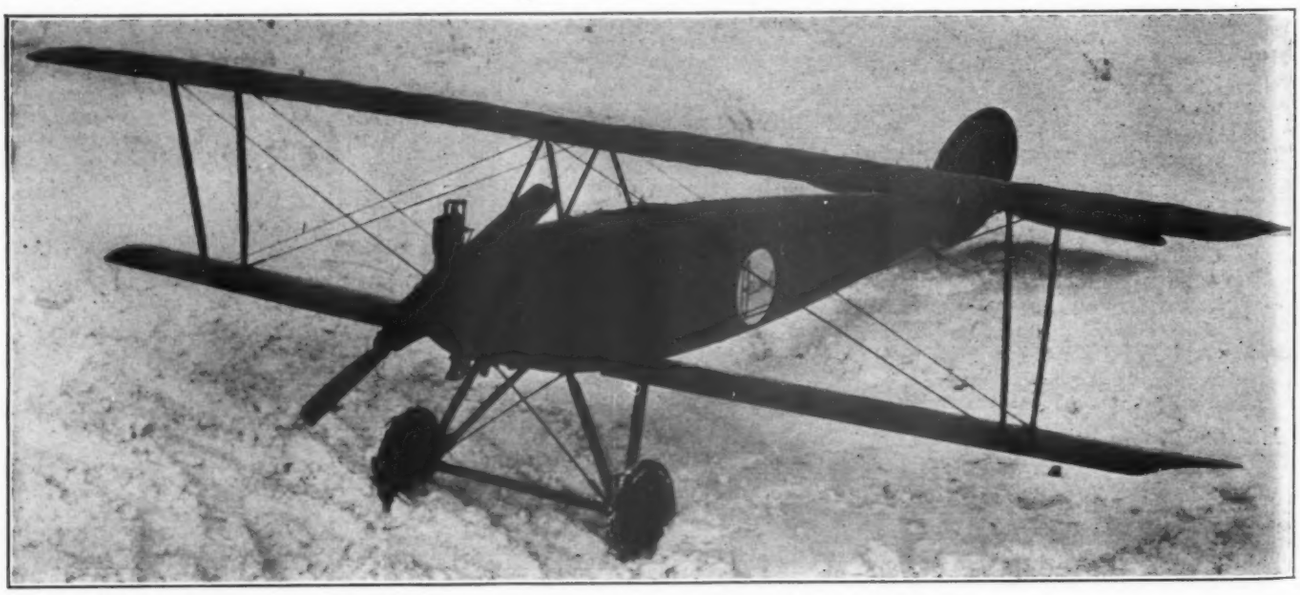
Bellanca was with the Maryland Pressed Steel Co. of Hagerstown, Md., from 1917 to 1920. During that time he designed and built the Bellanca C. D. tractor and C. E. tractor biplanes. In the Spring of 1919 they produced the Bellanca C. E. two-place biplane, using a 40-45 hp. Anzani engine. It was similar to a previous model, the Bellanca C. D. single seater, equipped with a 35 hp. Anzani. The C. E. was designed for a 55 hp. Anzani but a 40-45 hp. Anzani was actually used giving better performance than was estimated with the 55 hp. Anzani engine. These planes closely resemble some of our present commercial machines. Due to the labor conditions at the time, particularly at the Anzani engine plant in France, great difficulty was experienced in producing these planes. The 55 hp. model had a span of 28 ft. and a chord of 4 ft. 6 in. on the upper wing and a span of 21 ft. 5 in. and chord of 2 ft. 6 in. on the lower wing, giving a wing area of 184 sq. ft. The plane weighed 470 lb. empty and carried a useful load of 510 lb. With full load it had a high speed of 102 m.p.h. and a landing speed of 41 m.p.h. with a climb of 600 ft. per. min. The plane was of conventional design at that time, having solid ash wing beams and the fuselage of box girder construction employing wires for bracing.

It was at Omaha, Nebr., in 1922 that Bellanca built the first of his present type monoplanes. This plane was financed by Victor H. Roos and others of that city. Later that year the Roos-Bellanca Airplane Co. was organized at Omaha.

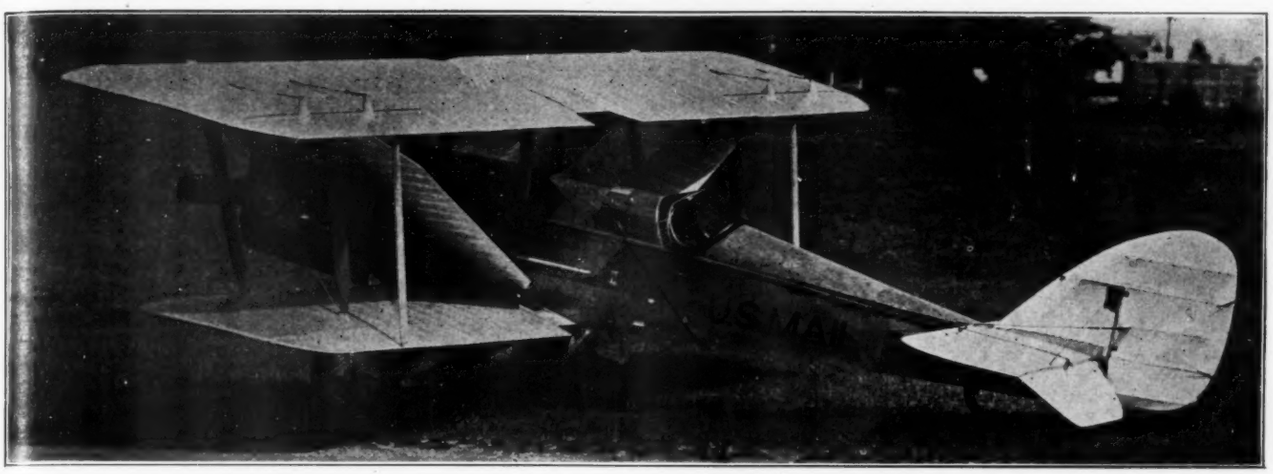
First Plane Called Bellanca C. F.

The first plane was called the Bellanca C. F. —5 seater monoplane. It is similar to the Bellanca monoplane used by Chamberlin and Levine on their trans-Atlantic flight, having a closed cabin seating four passengers and the pilot, who is seated outside. With a little crowding, six could be accommodated. Though the fuselage and wing construction are similar to the present Bellanca design, the tail surfaces and landing gear are radically different. Of course the well-known Bellanca lifting wing-struts were used. The landing gear was of the conventional type at that time with the spreader of lift section. The rudder was of oval shape. A 90 hp. Anzani air-cooled engine was used. The plane had a span of forty feet, chord of six and one half feet, with a total wing area (including the struts) of 270 sq. ft. The weight loaded was 1990 lb. With full load it had a high speed of 108 m.p.h., landing speed of 40 m.p.h., a climb of 600 ft. per min. and a cruising range of 600 mi. The glide ratio was one in twelve.

Immediately after its construction it was entered in an airplane meet at Monmouth, Illinois, where it captured four



The Bellanca C.E.A. 1919 model powered with an Anzani 40-45 hp. engine.



Bellanca-DH mail plane of the U. S. Air Mail Service, a plane used on day and night service between Chicago and Cheyenne.

first places in the four events of the meet. At the International Air Races held at St. Louis in 1923 it won the Aviation Country Club of Detroit Trophy for speed and efficiency. In the efficiency contest it had over twice as many points as its nearest competitor. In all, this plane had captured thirteen first prizes in various aeronautic events.

In Sept. 1921 Donald W. McIlhiney published an article in AVIATION on the efficiency of cabin airplanes. He based his comparison on a figure of merit calculated as follows:

$$\text{Figure of Merit} = \frac{\text{V per cent. max} \times \text{pay load} \times \text{range}}{\text{V landing} \times \text{power}}$$

The Bellanca C. F. had a Figure of Merit of 9100. The Junker JL6 was next with 6246. This Figure of Merit was calculated from the predicted performance before the plane was built. From the actual performance of the plane the Figure of Merit is 9200.

Late in 1923 Mr. Bellanca left the Roos-Bellanca Airplane Co. to form the Bellanca Aircraft Co. at Farmingdale, L. I.

At Farmingdale he designed the Bellanca DH mail plane. It was a Liberty engined, single seater biplane with long diagonal interplane struts. These struts take the place of flying wires and of an airfoil section giving lift. Three of the DH type were built for night service between Chicago and Cheyenne, making 160,000 mi. each. These planes are now being held in reserve.

In 1925 Mr. Bellanca joined the Wright Aeronautical Corp. of Paterson, N. J. There he built an improved model of the Bellanca C. F. As is well known this model was called the Wright-Bellanca monoplane. It was a six-place cabin plane with the pilot in the forward part of the fuselage.

"Trouser" Landing Gear Covering

Though it was slightly larger than the C. F., it had a much better performance. This model was powered with a Wright Whirlwind engine and is almost identical with the one used on the trans-Atlantic flight. The landing gear was of cantilever construction, built of duralumin and chrome molybdenum tubing. This landing gear was somewhat novel in appearance, having the entire structure covered over in such a manner that the covering resembled "Trousers". The plane seated five passengers comfortably and, if necessary, one more passenger could be carried in lieu of baggage. For express and mail carrying, the larger cabin space of 122 cu. ft. gave good cargo room.

The passengers were accommodated in a well ventilated cabin fitted with comfortable chairs. There were nine windows in the cabin, giving the pilot as well as the passengers excellent vision.

The span was increased to forty-five feet with a chord of six feet seven inches. As the lifting struts were tapered in.

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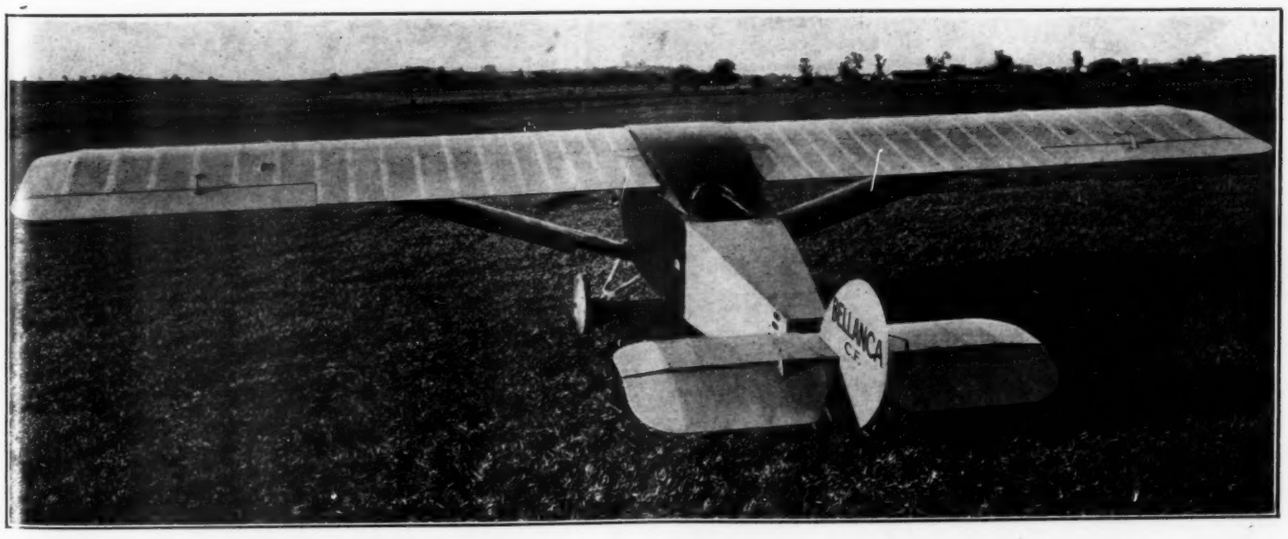


Three-quarter rear view of the Bellanca CF cabin plane, a 1922 forerunner of the Columbia.

Thousands Greet Chamberlin at Vienna

With Charles Levine as Passenger He Flies the Columbia through Storms to the Austrian Capital, Stopping on the Way at Munich

AFTER A delay of one hour and a half Clarence D. Chamberlin, accompanied by his trans-Atlantic passenger, Charles A. Levine, took the "Columbia" off the Templehof Airdrome in Berlin and headed towards Munich, en route to the city of Vienna.

At Templehof they were bade farewell by representatives of the German Foreign Office, one of whom, Dr. Thomsen, and De Witt C. Poole, counselor of the American Embassy, accompanied them to Vienna.

With the words "New York-Berlin-Kottbus," the last in smaller letters freshly painted on her side, the Columbia took the air at 10:30 a.m. There was a strong head wind and Munich was reached only at 3 p.m., two hours behind schedule.

Nevertheless a huge throng, totaling probably 100,000 persons, welcomed the Americans. They motored to the City Hall, where they were greeted officially by the Mayor and City Council and entertained at luncheon. Then they resumed their pilgrimage into the Austrian Republic.

German and Austrian Escort

Escorted by six German and Austrian machines, the Columbia was landed in Vienna at 8 o'clock at night, three hours late and in a heavy rain, but to the cheers of 30,000 Austrians who had waited, water-soaked, through the hours to welcome the Americans.

Another 20,000 of the crowd had left Aspern Aerodrome on the outskirts of the city, when the rain began, and others dwindled away during the long wait.

The Columbia and its escorting fleet appeared from over the rain clouds to the west just at dusk. The plane made a perfect landing in the center of the field after maneuvering over the crowds for a few minutes.

A second or so later Chamberlin and Levine jumped from the cockpit. The Austrians shouted, the band played "The Star Spangled Banner" and cameras clicked in the greatest welcome any fliers ever had in this country.

Chamberlin was immediately hoisted to the shoulders of the crowd and carried through the rain about the field, while he acknowledged the cries and cheers with smiles and waves of the hand. Levine went through the same experience.

Receive Austrian Air Club Medal

Then both were deposited on a platform, where Dr. Hans Schurff, the Minister of Commerce, American Minister Albert H. Washburn and a hundred other city and State officials shook their hands and welcomed them to Vienna. Dr. Schurff delivered the Government's address of greeting, Mr. Washburn made a short speech and both fliers made replies, all of which was carried by radio throughout Austria.

Officials of the Austrian Air Club then stepped forward and presented small diamond-studded medals to both men in appreciation of their achievement and their visit to the country. Medals from the Government and city were also presented.

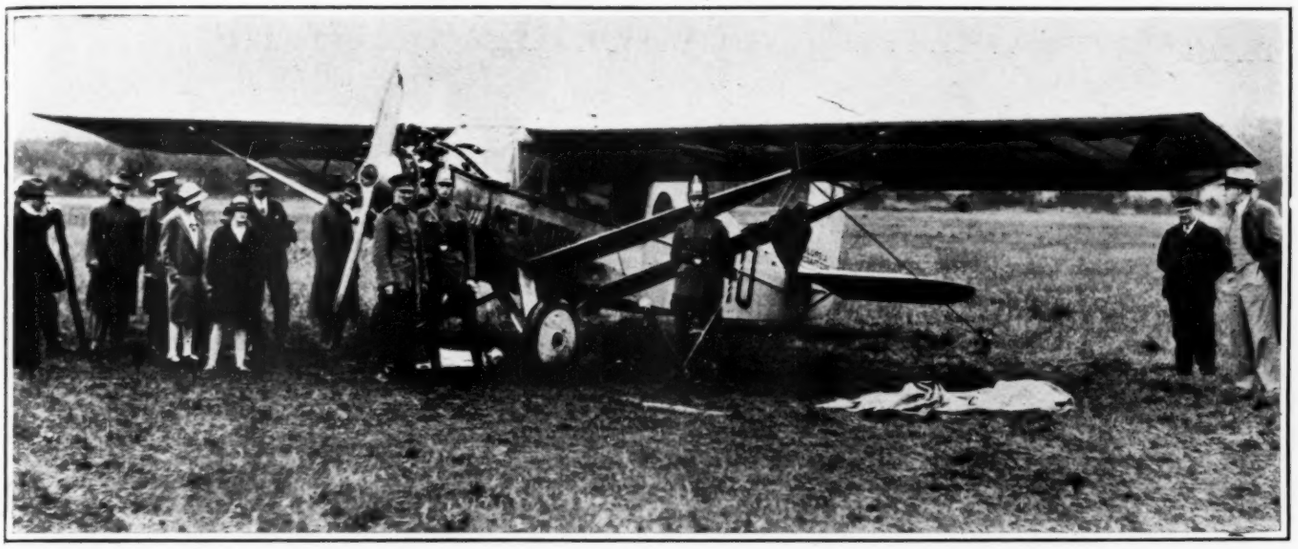
When the decorated automobile carrying the two principal visitors left the field, the rain stopped. The car passed more than 150,000 people who lined the twelve-kilometer route to the Hotel Imperial, where the fliers are staying in the former imperial suite of the Hapsburgs.

Whatever changes Republicanism has brought to the Viennese, it has not robbed them of their enthusiasm in watching parades. Their cheers carried all along the route with the same gusto and sincerity as used to mark the progress of the old Emperor Francis Joseph through his capital.

When the Ring, the center of the city was reached, the crowds could not be controlled by the police. They rushed to the center of the street, ran after the fliers car and almost tore them from it.

Thousands who gathered in front of the hotel after the

Chamberlin and Levine being carried off Tempelhof airdrome on the shoulders of German admirers. Note new German propeller on the Columbia.



German police guarding the Columbia at Kottbus where it was forced to land in a swamp, due to a shortage of fuel, damaging the Hartzell walnut propeller.

airmen had entered, shouted for ten minutes until they reappeared on a balcony and waved and bowed for another five minutes. An hour later they made another triumphal journey from the hotel to the house of the American Minister, where they dined in company with Legation officials, and members of the Government and diplomatic corps more or less informally.

On the following day, President Hainisch and Chancellor Seipel received them and presented to Chamberlin the Austrian Order of Merit for his feat. They were the guests at the palace at an official State luncheon.

From Vienna, the Columbia's itinerary tentatively arranged is Prague, Budapest, Warsaw, Zurich and Paris.

The aviators hope to land at Paris July 4. They have made provisional reservations for their return trip on the Leviathan for July 12, which in the event of their going, would carry the Columbia also.

Novel Balsa Wood Airplane Loud Speaker

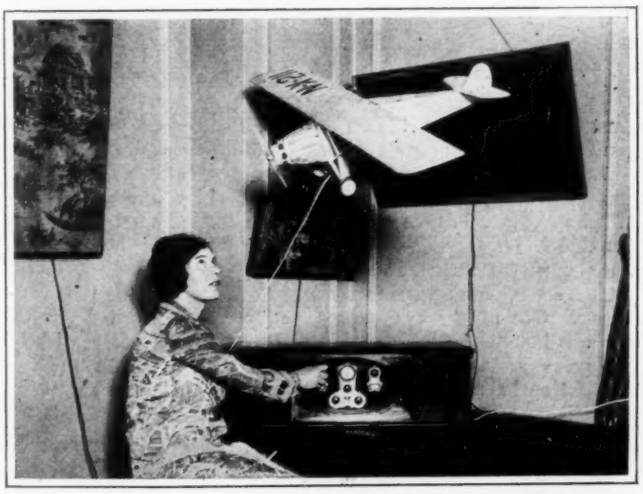
A radio loud speaker in the form of a model of the Spirit of St. Louis has been presented to Col. Charles A. Lindbergh by the Balsa Wood Co., of New York. The model is constructed entirely of Lata Balsa Wood; the same wood furnished the Ryan Airlines, Inc., for streamlining. The speaking unit is placed in the cockpit and the wing acts as a sounding board. In tone and clearness this novel loud speaker gives good results.

E. Howard Figg, president of the Balsa Wood Co., originated the idea of an airplane loud speaker, and the model was constructed by the Curtiss Aeroplane & Motor Co., Inc. The framed pictures shown in the accompanying photographs are also Balsa wood loud speakers.

Balsa wood, the lightest wood adaptable for commercial purposes, is especially useful in airplane construction. The Balsa Wood Co., Inc., is the sole distributor of a grade of balsa wood sold to the trade under the trade name of Lata Balsa Wood. After many years of experience and experimentation a high grade lata balsa airplane lumber was developed and has proven very valuable for airplane manufacturing requirements. Most airplane manufacturers now use balsa wood for streamlining steel tube struts, and as a filler in the fuselage. Insulation of the oil feed and pump with a balsa wood housing to prevent freezing at low temperatures is another use of this material.

Seaplane pontoons have successfully been made of Lata Balsa Wood. The wood is a good buoyant medium and is resilient to a high degree. It absorbs shock when the plane alights and keeps the plane high in the water. The wood contains about 90% dead air in its large barrel shaped cells and this contributes to its ability to sustain heavy loads in water.

One of the recognized drawbacks to air travel is the noise of the engine, rendering conversation practically impossible. Lata Balsa wood has been called upon to help overcome this difficulty. Panels of this material faced with aluminum or other light durable metal have recently been developed for enclosing cabins of passenger planes, and tests have shown that these panels appreciably deaden engine noise.



The Balsa wood airplane loud speaker

Balsa wood is one of the finest insulating materials known, having a conductivity of .31 B.T.U. per hr., per sq. ft. per in. thickness, per degree Fahrenheit change. It has proven ideal for insulating the cabin against sudden temperature changes. Balsa wood only weighs approximately a half pound per board foot and its extreme light weight makes it admirable for insulation purposes.

Advertising and Selling Airplanes

Alexander Aircraft Co. Divides Country Into Sales Territories And Aids Its Dealers With Direct to Consumer Advertising

By WILLIS H. PARKER

THE PROBLEM of advertising and selling airplanes now is not much different from the problem of advertising and selling automobiles 20 years ago, declares J. A. McInaney, salesmanager of the Alexander Aircraft Co., Denver, Colo., manufacturers and distributors of airplanes and said to be the first airplane company to have an "air sales force."

Twenty years ago, the automobile industry was emerging from an era of manufacturing and distribution wherein the supply was about equal with the demand, the demand coming largely from persons possessed of a little more daring than others or who had money and bought automobiles largely because of the "desire to possess." The public in general looked upon motor cars as dangerous and impractical; luxuries that never could be a necessity.

J. A. McInaney, sales manager, Alexander Aircraft Co.

Aerial transportation has just emerged from that same position. The supply is somewhat greater than the demand and airplane companies like automobile concerns are having to go out and sell their products. Prospects must be convinced of the safety of airplanes of present day manufacture; the margin of safety today is estimated to be more than 500 per cent greater than the safey of airplanes manufactured about the time of the world war and the cost of planes, too, has decreased materially, Thus having eliminated the saftey and price elements from sales resistance, the element of utility is about all that remains.

The advertising, therefore, must be directed to the consumer. Out of the millions of people in the United States, the airplane company must ferret those immediate likely prospects and direct the advertising to them. At present production hasn't reached such a point that heavy newspaper advertising seems practical—it will come to that later. Likely prospects are scattered over a wide territory and to get in touch with such prospects is no easy task.

Nation Divided into Territories

The Alexander plan, according to Mr. McInaney, calls for a division of the nation into territories and the appointment of a dealer in each territory. It is through the dealers that the advertising is directed to the consumer.

The boundaries of the territories are strictly and definitely outlined so that the dealer is protected from the encroachments of others into his territory. Since his territory is somewhat small in size, he is likely to know more prospects in proportion to the population of his territory, than he would had he the entire country to work in.

When Mr. Dealer finds a likely prospect, his name is mailed to the home office and the prospect is put on the mailing list to receive each month a copy of the firm's house organ, entitled, "The Alexander Aircrafter," edited by E. S. Winship. The magazine is 8 by 5½ in. and contains, counting the cover, 24 pages, filled with interesting material on aviation, particularly aviation recounting efficient exploits of the company's machines.

Then there are numerous articles, signed articles at that, by pilots relative to the exploits accomplished by them in an Alexander plane. There is usually an article by the president of the concern, one by the salesmanager, each recounting some progress in aviation and designed to arouse a desire to possess and to start an analysis of the prospect's business, by the prospect, to see if an airplane could be advantageously used for business purposes. For example, in one issue is an article entitled "Salesmanager Finds Speed and Economy in Flying."

National Advertising Carried

The magazine is chuck full of aviation news and photographs of aviators, businessmen in "aviation attire," dealers, flying fields and airplanes. It is so constructed that the magazine may be sent to dealers as well as prospects, and thereby serves a two-fold purpose. The dealer is supplied with extra copies which he may distribute to likely prospects, or anyone interested in the new form of transportation.

The next to the last page always contains the specifications of the plane, the performance which includes landing speed, high speed, climb, cruising range, etc.; the cash price on the Denver field; while on the back page—the cover page—lists the dealers and their locations and a coupon which the reader may fill out and mail to the company asking for additional information.

There is some national advertising in magazines devoted to aircraft, and, since the advertising usually contains a coupon to be filled out, about 25 inquiries a day are received through national advertising alone.

Five Inquiries Per Day Received

In one issue of the magazine there was a full page semi-questionnaire, under the title of "I AM READY FOR THE AIR." The prospect may check the following statements:

I am interested in flying as a vocation ( )
I could use a ship in my business ( )
I desire to fly for pleasure ( )
I am a trained pilot ( )
I am not a trained pilot ( )
I would like to learn about your student course ( )
I have seen the EAGLEROCK ( )
I have not seen the EAGLEROCK ( )
I have not received your EAGLEROCK catalog ( )
Please put me in touch with your district dealer ( )
Please tell me about your Time Payment Plan ( )
I will be in the market for a ship about ( )

Signed .....

My Address is .....

The firm receives about five inquiries a day from such an advertisement. Notice the wording; it is so constructed as to make it possible for almost any person to fill it out, if merely for information purposes whereas it is not likely that any other than those directly interested in flying, after having previously learned to fly, would fill out the usual sort of coupon which asks that information regarding an airplane be forwarded.

Stickers for the windshields of dealer's automobiles, windows of their stores, etc., are widely distributed. These are about 12 inches long and eight inches high; cut out in

the shape of an airplane and showing two persons in the plane. Wherever possible the dealer is urged to keep an airplane on display in his store and a good location is advantageous. Just as in olden days when automobiles were

Alexander Aircraft Co. buildings at Denver, Colo.

still somewhat of a novelty, the presence of a car in the display room, behind the plate glass windows, was of sufficient attraction as to bring many persons into the establishment to gain information about "the consarned thing."

Motion picture advertising backs up the dealer and other forms of advertising. The riding qualities, maneuverability and utility of the plane are quickly visualized in a motion picture playlet. The films are furnished the dealers free of charge, to be exhibited in the theaters in his locality.

Lindbergh Flight Comment

Commenting upon Lindbergh's wonderful achievement, Chance Vought, designer and manufacturer of many of the airplanes used in the Naval Air Service, said:

"In all of aviation's remarkable history there has been nothing so audacious, so courageous, so signally successful, as Lindbergh's solo flight to Paris—a modern Viking, who, of necessity, could not utilize many of the newest scientific instruments available to insure accuracy of trans-oceanic navigation.

"The aeronautical fraternity the world over can be justly proud that this modest doer has achieved his ambitious goal. His quiet, matter-of-fact preparation augured well for precise and successful achievement. The greatest individual effort aviation has ever seen got off to a good start when Lindbergh, unheralded, 'dropped in' one day from St. Louis, and despite handicaps, set about the business in hand and was away to a glorious climax almost before the public realized his coming. Achievements such as this instill real airmindedness in the people of our country as no other aeronautical effort could do.

"From the technical viewpoint, Lindbergh's epochal flight conclusively demonstrated the superiority of air-cooled aeronautical engines. The low power required to successfully fly his plane with its tremendous load was possible only because of the weight saved by air-cooling the engine. The obsolescence of water-cooled engines for high efficiency commercial and military aircraft has long been recognized by forward looking leaders in the aeronautical industry, but this is the first time that the striking advantages of the air-cooled engine for air commerce have been so conclusively brought to the public's attention.

"This flight, more than any other, has also focused attention of aeronautical engineers on the desirability of concentrating reliability in single power plants for airplanes in order that requisite safety may be most simply achieved while at the same time reducing the cost of commercial airplanes.

"The designers and builders of the airplane and equipment in which Lindbergh had such implicit confidence are to be congratulated on faultless performance and the success of their share of the project."

Air Service to Film Mexican Border

According to an oral statement made recently by M. Schnurr, secretary of the Commission on the Equitable use of the Waters of the Lower Rio Grande River, aerial photographs will be taken by the Air Service of the Department of War of certain areas bordering the Rio Grande, Colorado and Tia Juana Rivers, for use by the Commission.

A strip five miles wide on each side of the rivers will be photographed for the purpose of showing the drainage area of each of the streams.

According to the plans, it was stated, the area to be photographed includes 300 square miles on the Rio Grande, the entire route of the All American Canal on the Colorado River, the Black Canyon and Boulder Dam sites, and the course of the Tia Juana.

The secretary of the Commission explained that photographs made from an airplane would accomplish approximately the same purpose in some instances as a visit by the Commission to the territory itself, and would afford permanent records.

Chamberlin an Ex-Army Pilot

Clarence Duncan Chamberlin was born in Denison, Iowa, Nov. 11, 1893. He enlisted in the United States Army at Fort Omaha, Nebraska, in 1917. He was sent to the Ground School, Urbana, Illinois, March 9, 1918, and graduated May 25, 1918. He attended the Flying School, Chanute Field, Illinois, from May 1918 until he was commissioned a Second Lieutenant, Reserve Military Aviator, Air Service, July 16, 1918. Lieutenant Chamberlin reported for duty at Camp Dix, New Jersey, June 30, 1918, and then went to Wilbur Wright Field, Ohio, August 10, 1918. At the latter place he studied gunnery. He was next detailed for advanced flying at Payne Field, West Point, Mississippi, September, 1918 He arrived in Hoboken on Nov. 9, 1918, to sail for overseas. On account of the Armistice, however, he did not go overseas, but returned to Payne Field, where he was a test pilot. Lieutenant Chamberlin was honorably discharged from Newport News, Virginia, in July, 1919.

No Accidents in 320,000 Miles of Flying

A recent announcement made by the Bureau of Aeronautics of the Department of the Navy states that airplanes comprising the Aircraft Squadrons of the Scouting Fleet established a record of 320,000 miles in the air without a major accident during the annual winter maneuvers at Narragansett Bay and related maneuvers.

There was not a single major casualty to materials and not one serious infraction of naval discipline or good conduct.

All this was made possible by the effective cooperation between the ships and flying units, and the commanding officers of the Units and the officers and men under them, and demonstrates the high value of morale and cheerful service.

Ryan NY-P Covered With Flightex Fabric

The wings, fuselage and tail surfaces of the Ryan monoplane used by Colonel Lindbergh were covered with Flightex Fabric, E. S. Twining & Co. It has been stated in reports that the plane encountered a heavy sleet storm for 10 hours, more than one thousand miles, and it is interesting to note that the fabric on the plane, after examination at Le Bourget Field was in the same condition as when it left America with the exception of a few strips removed by souvenir hunters.

Byrd's Scientific New York to Paris Flight Awaits Favorable Weather Reports

Plan to Study Air Currents and Storm Conditions Over North Atlantic In an Effort to Determine Quickest and Safest Air Course to Europe

AS AVIATION goes to press the three engined Fokker monoplane "America" is waiting, fully equipped, at Roosevelt Field, L. I until favorable reports of weather conditions over the North Atlantic areas permit Commander Richard E. Byrd to take it aloft and begin a contemplated non-stop flight to Paris. Accompanying Commander Byrd will be Lieut. George Noville, navigator and radio operator, Bert Acosta, pilot, and a fourth party yet to be named. The

(Acme)
Commander Byrd's three-engined (Whirlwind) Fokker in which he expects to fly to Paris.

objects of the flight are scientific exploration of the trans-Atlantic airlanes and pioneering research work, with a view of putting commercial flying between this country and Europe on a practical basis, and the technical data and scientific observations made during the flight are expected to be important contributions to the problem of ocean flying.

According to a recent statement of Commander Byrd he is considering the possibility of taking off about 6 o'clock in the evening so as to reach Europe in the daytime and have plenty of light for landing. It is expected that the flight will show the possibility in the future of finding a way through the obstacles which beset a trans-Atlantic flier by means of skillful navigation, which would enable the pilot of an ocean plane to change his course to avoid a storm or sleet and regain it later with as absolute certainty as the master of a steamship directs his ship as he desires.

To Fly at Varying Altitudes

Although Commander Byrd does not anticipate being forced off his course to any considerable extent, and will fly nearly on a Great Circle route, he hopes to prove that in the future the navigator of a trans-Atlantic airliner may turn and dodge as he wishes and still hit his objective accurately.

"My main purpose is to learn to some extent the quickest and the safest air course to Europe," said Commander Byrd during a recent interview. "These are not necessarily the same. The quickest course might be the southern end of a low area, or area of storm, where a strong westerly wind would blow the plane along at high speed, but such a course might be the most dangerous. We know very little about the weather conditions which prevail above the surface of the ocean on the edges of low pressure areas."

In order to acquire knowledge of air conditions, Commander Byrd will fly his plane at varying altitudes. In his navigation cockpit, which is aft the tank, he has a complete set of instruments showing the performance of the plane, his air speed, altitude, drift and other factors which must be studied to determine the conditions which are being met. Many of the instruments are duplicated on the board in the pilot's cockpit forward.

He will have all the instruments which Lindbergh had, including the earth inductor compass, and a few more, the most important of which is the bubble sextant, by means of which the exact position of the plane may be determined and plotted on a chart. It will be impossible for him to become lost, no matter how often he shifts his course, so long as he can get a sight of the sun or a star.

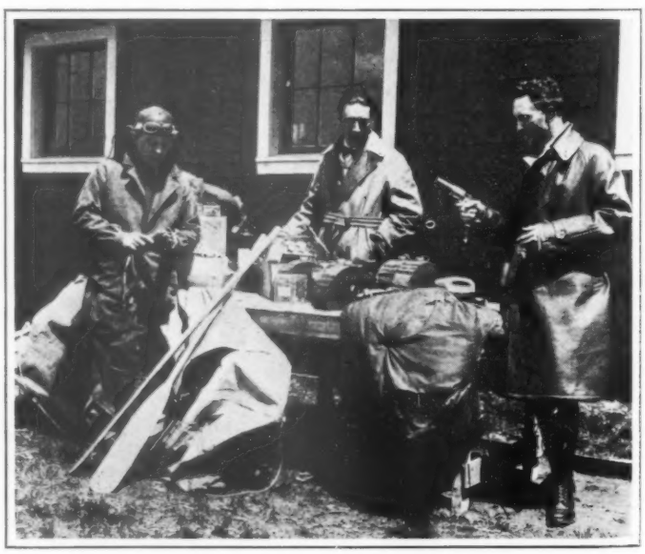
Plane Has 18,000 Ft. Ceiling

Although reports of weather conditions on the surface of the ocean from steamers are of vital importance, they shed very little light at present on what is going on at higher altitudes. There are many theories as to what occurs at high altitudes over the ocean with relation to surface winds, but few facts.

It has never been known, how deep is the fog over the North Atlantic. The flights of Lindbergh and Chamberlin indicated that the fog extends as high as the clouds, for, although they attempted to climb over the fog at times, they were often unable to do so. Inasmuch as the clouds over fog are frequently at an altitude of from 20,000 to 25,000 ft. Commander Byrd will not be able to climb over them this time as his plane has a ceiling of about 18,000 ft.

But, by confirming Lindbergh's and Chamberlin's observations as to the probable height of the fog, he will learn what a trans-Atlantic plane must do in the future to get over the fog and obtain observations from the sun or stars.

The relationship between the velocities of surface winds and winds higher up will be studied carefully on the flight,



(International Newsreel)
Left to right are Lieut. George Noville, Bert Acosta and Commander Byrd looking over the instruments and equipment they will take with them.

because at present it is believed that certain winds at the surface change their direction slightly at different altitudes and also change their velocity. This is of great importance to pilots in flying across the ocean, as an adverse wind with a velocity of only a few miles an hour makes a great difference in fuel consumption calculations.

The air over the ocean is full of vortices, where the low and high pressures meet, which are also affected to some extent by the winds from the polar regions and by the slight shift due to the drag of the rotating earth. In his shifting and complex pattern of an invisible medium, Commander Byrd hopes to find his way by means of his instruments and draw from the apparent chaos some deductions which will help the future navigators of the air.

For instance, it is believed that a surface wind from the southwest of ten knots an hour velocity shifts its direction at 1,500 ft. to a direct west wind with a slightly higher velocity. Apparently such a wind decreases in velocity up to 3,000 ft. and then slowly increases its velocity again. Just what happens at these altitudes is largely a matter of guesswork at present and it can well be imagined how valuable it would be for a navigator to know that he might increase his altitude a few thousand feet and turn the wind to his advantage.

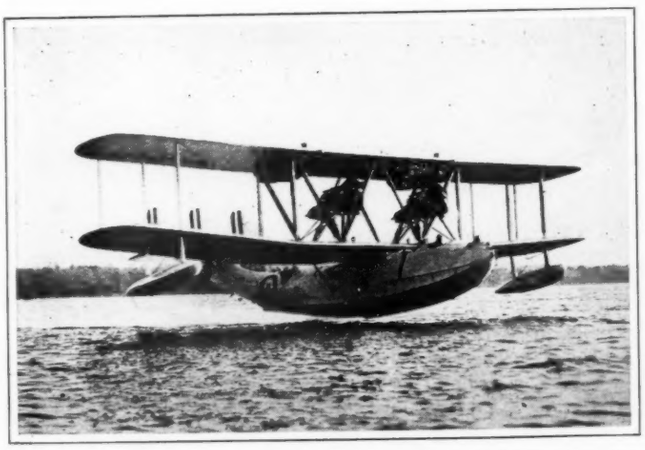
At still greater altitudes the wind becomes more constant, Commander Byrd believes, and at 20,000 to 25,000 ft. the present theory is that it blows from the west all the time with a velocity of about eighty miles an hour.

His study of the conditions on the edges of low and high pressure areas, if he is fortunate enough to be able to determine what they are with accuracy, should indicate whether it may not be possible that a stormy condition across the Atlantic, a series of low pressure areas, might not offer the best conditions for the trans-Atlantic flight.

English Flying-Boat Has Duralumin Hull

The new Supermarine-Napier "Southampton" is fitted with two 450 hp. Napier aero engines.

An interesting feature of the flying-boat is that the hull and floats are constructed entirely of duralumin with stainless steel fittings. The duralumin has been treated so as to



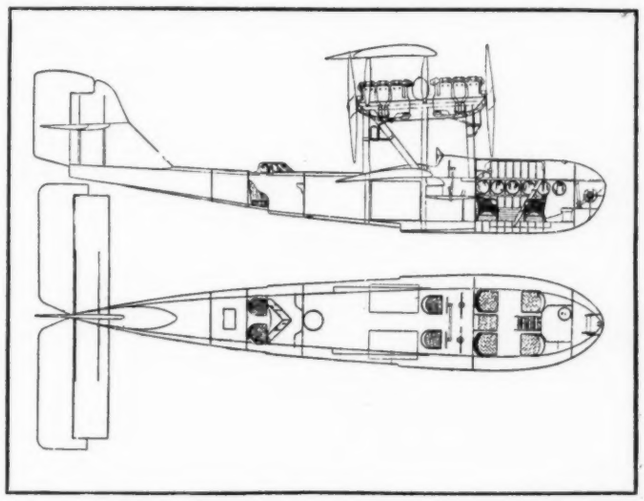
Supermarine-Napier "Southampton"; two 45 hp. Napier aero engines.

prevent the action of sea water, and the result is that a hull is obtained which is free from both rust and corrosion.

Another feature is that the hull itself is 500 lb. lighter than the hull in wood, and a further 400 lb. is saved due to the absence of water soakage. The 900 lb. saving can be utilized either by increasing by the weight the load carried, or else the range of the aircraft can be extended by about 200 mi. The Supermarine-Napier is one of the few types of machines which is able to maintain height with one of its two engines stopped.

New Italian Eight Passenger Flying-Boat

In Italy commercial airplane production is proceeding rapidly. Aeronautica Macchi of Varese, Italy, have produced a large flying boat accommodating eight passengers and two pilots. The passenger cabin is divided into two sections, two passengers being in the forward part of the hull and the other two in the rear behind the pilots. Both cabins are fitted with comfortable arm chairs, the forward compartment being for first class passengers and the rear compartment for



Plan and section of the cabin of the Macchi M 24 bis.

second class passengers. Between the pilots' cockpit and the second class cabin are the fuel tank and a luggage compartment.

The M 24 bis, as it is called, is a biplane having a span of 72 ft. 2½ in. with an area of 394 sq. ft. The plane is powered with two Isotta Fraschini engines developing 1,000 hp., the engines being placed above the heads of the pilots.

The total weight empty is 8,160 lb. With a load of 4,080 lb. it has a high speed of 118.1 m.p.h. and a climb of 9,830 ft. in 32 min. It has a cruising radius of about 622 mi. If only eight passengers are carried and extra fuel tanks installed the range would be about 777 mi.

De Pinedo Ends Four-Continent Flight

Piloting the Santa Maria II, Col. Francesco de Pinedo arrived safely at the mouth of the River Tiber at Ostia, Italy on the afternoon of June 16, thus completing the 25,000 mi. aerial journey which twice carried him across the Atlantic and over some of the wildest unexplored regions of the world in South America.

De Pinedo received an enthusiastic welcome from Premier Mussolini, who was the first to shake his hand and embrace him when he set foot again on Italian soil, and from a vast crowd of several score thousands of people who lined the beach at Ostia and shouted and waved their greetings when his airplane hove into sight.

The Santa Maria arrived off Ostia punctually at the appointed time, escorted by an escadrille of navy seaplanes. Its appearance immediately gave rise to truly remarkable demonstrations of enthusiasm on the part of the crowd.

After twice circling over Ostia, the Santa Maria alighted smoothly on the sea in front of a float, on the end of which Mussolini and the highest State officials were gathered. De Pinedo, his navigating officer, Capt. Carlo Delprete, and the mechanic Vitalo Zacchetti, were taken off in a motor launch, which carried them over to the pier.

The cheering reached its apex when the three aviators, standing in the stern of the launch, raised their arms in the Roman salute toward the crowd.

The Pitcairn Fleetwing De Luxe

Powered by a 90 Hp. OX5 Engine and Designed to Give Maximum Performance

THE PITCAIRN Fleetwing De luxe, fourth in line of Pitcairn Commercial Aircraft and successor to the Orowing, was designed to give maximum performance with the OX 5 engine, combined with the highest standard of construction and careful attention to finish and appointments. The flight tests, which were run on March 29, entirely corroborated the performance calulations made at the outset of the design, and gave the new plane a very high rating in comparision with the OX 5 jobs on the market. Comparative flight tests have shown that the Fleetwing in maneuverability, speed, take-off, and climb outperforms several well-known types, including the Orowing.

Maneuverability is an outstanding characteristic of the new plane. The ratios on the controls are such that it responds almost instantaneously to movement of the stick and rudder bar. The powerful differential aileron control employed in this plane on the lower wings proves effective and efficient to a remarkable degree. Performance has also been improved by the overall cleanness of design, provided particularly by setting the radiator in the nose of the plane and cowling it entirely with a triangular shell, which forms part of the engine cowling.

The Fleetwing De luxe follows standard Pitcairn construction, which has been so successful in the Fleetwing I, the Sesquiwing, and the Orowing. The landing gear and tail skid installations are indentical with their forerunners, and the fuselage very much the same. The fuselage longerons, however, have been made of round-cornered square tubing, to facilitate the fitting of the struts. In the lower bay the two cross struts to which the torque bearings are bolted are also of square section to eliminate fittings. The engine mount is integral with the fuselage, the bearers being of square tubing. To dampen engine vibration, brake lining is used under the heads of the mounting bolts and under the engine feet, and heavy steel springs under the nuts of the bolts.

Tail surfaces are entirely new, and are constructed of steel tubing throughout. The square section is used for the rear beams only of the fin and the stabilizer to simplify the hinges and the attachments to the plane. Instead of offsetting the fin to counter-balance engine torque, it is made with section unsymmetrical, and has proved satisfactory.

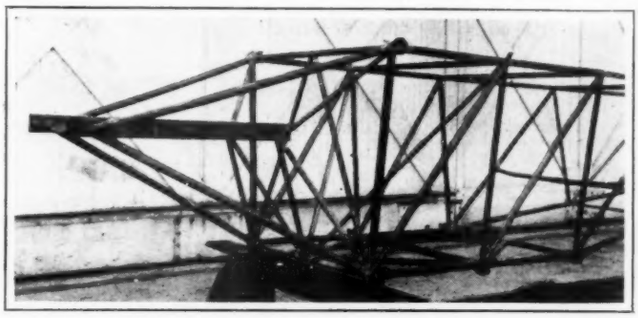
The design of the engine cowling, particularly the nose shell around the radiator, was carefully laid out before forms were made. The top hood over the motor extends to the line of the exhaust manifold on either side, and is made in two halves, hinged on the top center as on an automobile. Either half may be quickly raised by releasing two locks, and the whole piece is readily removable for top overhaul. The nose shell is also split horizontally on a line with the exhaust stacks, and the upper part may be taken off to give ready access to the honeycomb radiator. The lower part of this shell and the two side panels of the engine cowling are fastened semi-permanently to the fuselage, but may be removed quickly if desired. The

Front view of the Pitcairn Fleetwing De Luxe.

The Pitcairn Fleetwing De Luxe, latest addition to the Pitcairn line of commercial planes.

bottom pan is hinged along one side and may be dropped down by releasing two hood locks on the other side. The right side cowl is fitted with a hinged door for reaching the carburetor adjustment. Oversized louvers are placed on the top cowl to allow the air stream through the radiator to escape through the vee of the engine.

Immediately behind the firewall is placed the gasoline tank which is a part of the passenger cockpit cowl. It carries

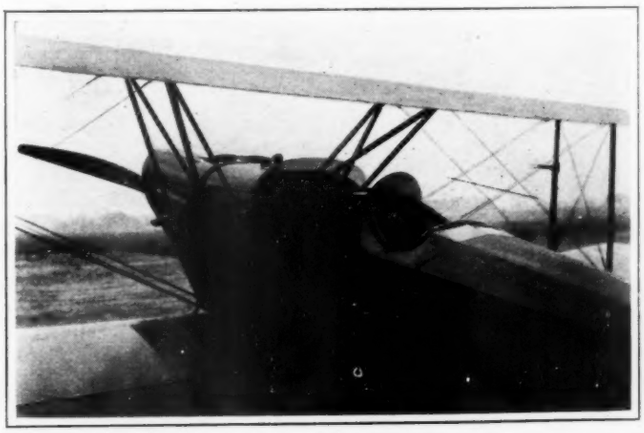


Engine mount as an integral part of the fuselage. Note use of square section tubing.

the windshield and part of the upholstery for the forward cockpit. The gasoline is fed by gravity through a strainer to the carburetor, and can be shut off from the pilot's cockpit.

The pilot's cockpit is well enclosed with a cowl designed to give complete vision to the pilot without having to move his head to see the ground or to see forward. The cockpit opening is well upholstered to protect the pilot's head and face. Deeper seat and back cushions have been fitted to both the pilot's and passenger's seats, the same simple, easily-installed seats being used as on the Orowing. A steel tube turtleback is welded to the top of the fuselage to fair in the fuselage. The cowling for the pilot's cockpit extends over the turtleback to form an auxiliary seat, which many pilots use in getting in or out of the plane.

The wing cellule forms an interesting part of the Fleetwing. Streamline steel tubing is used for the struts and streamline wires for bracing. The upper panel is made in a single piece with the spars spliced in the center. The ribs were



Rear quarter view showing cockpits and the gasoline tank in front.

tested to a factor of safety of 8, and weigh 5⅜ oz. Nose ribs made of duralumin channel are spaced between the main through ribs to hold the upper contour on the nose. A tubular bow is used on both wings and forms a neat wing end.

Ailerons and controls are on the lower panel only, the upper wing being only a simple job of wing assembly. The ailerons are welded up of steel tubing, and have an aspect ratio of 12. The front beam of the aileron is a length of streamline steel tubing with the hinges at the top. Differential aileron control is accomplished by means of push-and-pull tubes, the aileron on one side rising 30° while the one on the other side depresses the aileron 12°. Sidewalks are placed on each lower panel next to the fuselage.

A large and enthusiastic gathering, largely composed of the Pitcairn factory employees, watched the test flights made by James G. Ray, operations manager of Pitcairn Aviation, who was highly pleased with the performance of the plane. Since that time various civilian and government pilots have flown the plane, and have been enthusiastic in their praise of it. One even characterized it as an "OX 5 pursuit".

Performance flights were later carried out by the test pilot, and the following figures resulted:

Maximum speed	101.5 m.p.h.
Cruising speed	82 m.p.h.
Minimum speed	45 m.p.h.
Service ceiling	Not determined
Cruising range	400 miles
Endurance at cruising speed	4¾ hours

The general characteristics of the Fleetwing De luxe are as follows:

Span, both wings	30 ft.
Chord, both wings	48 in.
Gap at center	62 in.
Stagger	18 in.
Incidence, both wings	1°
Dihedral, upper wing	0°
Dihedral, lower wing	3°
Length overall	21 ft. 10¼ in.
Height overall	8 ft. 7¼ in.
Weight empty	1165 lb.
Useful load	1785 lb.
Passengers	340 lb.
Pilot	170 lb.
Gasoline	210 lb.
Oil	32 lb.
Water	33 lb.
Weight loaded	1950 lb.
Area of wings	226.2 sq. ft.
Area of horizontal tail	25.4 sq. ft.
Area of vertical tail	8.9 sq. ft.
Power	90 h.p. at 1400 r.p.m.
Wing loading	8.63 lb. per sq. ft.
Power loading	21.7 lb. per h.p.
Wing section	Modified U. S. A.—40

Column Effect in Wing Spars Report

Approximations for column effect in airplane wing spars forms the subject of Report No. 251, issued by the National Advisory Committee for Aeronautics, and compiled by Edward P. Warner and Mac Short. The significance attaching to column effect in airplane wing spars has been increasingly realized with the passage of time, but exact computations of the corrections to bending moment curves resulting from the existence of end loads are frequently omitted because of the additional labor involved in an analysis by rigorously correct methods. The present report represents an attempt to provide for approximate column effect corrections that can be graphically or otherwise expressed so as to be applied with a minimum of labor. Curves are plotted giving approximate values of the correction factors for single and two bay trusses of varying proportions and with various relationships between axial and lateral loads. It is further shown from an analysis of those curves that rough but useful approximations can be obtained from Perry's formula for corrected bending moment, with the assumed distance between points of inflection arbitrarily modified in accordance with rules given in the report.

The discussion of general rules of variation of bending stress with axial load is accompanied by a study of the best distribution of the points of support along a spar for various conditions of loading.

Report No. 251 may be obtained upon request from the National Advisory Committee for Aeronautics, Washington, D. C.

Twenty-Seven Planes Expected to Start In the 1927 National Air Tour

Program Calls for a Flight of 3800 Miles in Sixteen Days With Stops at Twenty Cities Along the Route

ACCORDING TO the latest statement issued by Ray Coopper, tour manager of the National Air Tour, at the time AVIATION goes to press, twenty entries have been officially received and an additional seven are expected before the entry closing date. The first machine will take off from the Ford Airport at Detroit at ten o'clock on Monday morning, June 27, and at intervals of one minute the remaining planes will take the air and head for Buffalo which will probably be the first stop of the 3800 mi. reliability tour.

Mr. Cooper received word on June 18 that Anton H. G. Fokker of the Atlantic Aircraft Co. would not be able to enter a plane in the tour because of his company being behind in production orders filed.

A message from the Ford Motor Co. indicated that one of the Stout-Ford three-motored planes would be entered.

A wire from the Ryan Airlines, Inc., of San Diego was received saying that their entry of a Ryan brougham, flown by Frank Hawks, who will be accompanied by his bride, is in the mails.

$12,000 in Cash Prizes

The entries thus far received indicate that the older type of aircraft motors, which have for 10 years been the mainstay of men and companies building experimental planes, are disappearing, and modern, and in some cases, seemingly revolutionary types of power plants are being introduced.

The planes and pilots will compete, as their reward for about $12,000 in cash prizes and the Edsel B. Ford Reliability Trophy. The program calls for a flight of 3800 mi. in 16 days' elapsed time. During the tour the entries will visit more than twenty cities, winging their way in a vast circle that touches the eastern seaboard, swings south and west over Texas and Oklahoma, and loops up across Iowa and Illinois to the home port again.

The first tour was arranged in Sept., 1925, and 13 of the 14 planes that started off on the 1900 mi. course finished, covering a total of 24,700 air miles. There was not a single accident from beginning to end, though the last hours of the flight were accomplished in a dense fog which made landing at Detroit airport difficult. The success of the initial Tour brought home to aviation men and laymen alike a realization of the tremendous possibilities of commercial air transportation. Last year another national tour, this time of 2600 mi. was arranged with 25 planes starting. Twenty planes finished the long journey and the others were forced to quit because of mechanical troubles only.

Longest Flight is 350 Miles

The route this year will extend from Detroit across Canadian soil to Buffalo and thence on to the eastern seaboard, touching Geneva, N. Y., Schenectady, N. Y., Boston, Hartford, Conn., New York City, Philadelphia, and Baltimore. From this point the route doubles back across the mountains of Pennsylvania to Pittsburgh, and then starts on the western loop which includes Cleveland, Kalamazoo, Dayton, Columbus, Cincinnati, Louisville, Memphis, Pine Bluff, Ark., Dallas, Oklahoma City, Tulsa, Wichita, and Omaha. At this point the course again bends east and the tourists will then touch at Moline, Hammond, Ind., Grand Rapids, and land at Detroit.

The longest individual flight on the tour is from Louisville to Memphis, a distance of about 350 mi. Three other long hops are also included, being from Pine Bluff to Dallas, Wichita to Omaha, and Omaha to Moline. The shortest day's flight will be from Pittsburgh to Cleveland.

The Edsel B. Ford Trophy

The following are the twenty entries received to date:

Pitcairn P. A. 5, Pitcairn Aviation Co., Philadelphia, James G. Ray, Wright Whirlwind.

Mercury, Aerial Service Corp., Hammondsport, N. Y., H. C. Mummert, Wright Whirlwind.

Waco, Cleveland Pneumatic Aerol Co., Cleveland, E. W. Cleveland, Wright E.4 engine.

Waco, Advance Aircraft Co., Troy, O., Richard Pears, Fairchild Caminez engine.

Waco, Advance Co., Douglas H. Davis, Wright Whirlwind.

Waco, Advance Co., John P. Wood, Wright Whirlwind.

Waco, Advance Co., John Paul Riddle, Wright Whirlwind.

Stinson Detroiter, "The Wise Birds," Detroit, Leonard Flo, Wright Whirlwind.

Stinson-Detroiter, Wayco Air Service, Inc., pilot not named Wright Whirlwind.

Air King, National Airways System, Lomax, Ill., Glen J. Romkey, Curtiss C. 6 engine.

American Eagle, American Eagle Aircraft Corp., Kansas City, Mo., Larry D. Ruch, OX-5 engine.

Meteorplane, Irwin Aircraft Co., Sacramento, Cal., Jack Irwin, Irwin radial motor.

Challenger, Kreider Reisner Airplane Co., New Jersey, A. H. Kreider, OX5.

Sportster, Curtiss Wright Aero Syndicate, Detroit, Carl Milkreit, Anzani engine.

Air Coach, Curtiss Wright Aero Syndicate, Chever Cameron, Hisso engine.

Buhl Air Sedan, Buhl Aircraft Co., Maryville, Mich., Louis Meister, Wright Whirlwind engine.

Hamilton Metalplane, Hamilton Metalplane Co., Milwaukee, Ralph G. Page, Wright Whirlwind.

Eaglerock, Alexander Aircraft Co., Denver, Cloyd P. Clevenger, Wright Whirlwind.

Eaglerock, Alexander Aircraft Co., Paul R. Braniff, Wright Whirlwind.

Hurd Monoplane, E. P. Hurd Aeronautical division, Detroit, Rodney S. Lamont, Aircat engine.

General Fechet to Serve Only Four Years

In a Department of War announcement it is stated that, at his own request, Brig. Gen. James E. Fechet, assistant chief of the Army Air Corps, will serve only one term of four years as Chief of Air Corps after he succeeds Maj. Gen. Mason M. Patrick who retires next December.

General Fechet, it was stated, had informed the Secretary of War, Dwight F. Davis, that he did not desire to succeed himself after his tour of service as Chief of the Corps.

At the instance of General Fechet, it was added, Secretary Davis also has approved a policy of a like nature with respect to appointments of Assistant Chiefs of the Air Corps, of which there are three, to succeed themselves.

This policy, Secretary Davis announced orally June 15, will not be rigidly enforced in all branches of the Army, but he expressed the opinion that it was basicly sound, because it permitted the training of a greater number of officers in high ranking positions in the Army establishment.

Bids for Four New Air Mail Routes

Postmaster General New has announced that on July 16, 1927, bids will be opened at the Post Office Department for the operation of four new contract air mail routes in various sections of the country. The first route runs from Albany, N. Y. to Cleveland, Ohio, via Schenectady, Syracuse, Rochester and Buffalo. The second route runs from Dallas to Galveston, Tex., via Houston. The third route runs from Dallas to San Antonio, via Waco and Austin, with a proviso that this route may be extended to Laredo whenever the Mexican government makes arrangement for air mail service from that country to the United States. The fourth route extends from Key West, Fla., to Havana, Cuba.

At the same time the Postmaster General announced that bids will also be received on July 16 for the proposed contract air mail route from Cleveland, Ohio, to Louisville, Ky. via Akron, Columbus, Dayton, and Cincinnati.

Rohrbach-Roland Sets New World Records

On May 29 and 30, 1927, the third machine of the airliner type, Rohrbach-Roland, fitted with three BMW engines, established three new world records at the Staaken Aerodrome. The plane was piloted by Herman Steindorff, and took off for the first flight in twelve seconds, carrying a useful load of 4420 lb. over a distance of 62.2 mi. from Belitz to Marwitz. The speed attained was 123 m.p.h. This flight was repeated, however, after a few minutes under the same conditions and the plane attained a speed of 124 m.p.h.

The next day a triangular course of 311 mi., Ruthnick-Wittenberg-Nikolasses, was chosen for the flight with the same useful load of 4420 lb. The speed attained was 123.8 m.p.h. By this outstanding performance, the prevailing record over the same course with a useful load of 2210 lb. was also broken.

After having been confirmed by the official witnesses of the Deutscher Aero Club the new records were handed to the Federation Aeronautique Internationale in order to be verified as official world records.

Another plane of the Rohrbach-Roland type broke three records in February 1927, i.e. endurance, speed, and distance. Owing to trouble with one of the three engines, the plane

Rohrbach "Roland" gliding in to land

was prevented from reaching the now attained records. Besides these extaordinary performances the Rohrbach-Roland proved its excellent flying properties on its trans-Alpine flight with the most unfavorable weather conditions. On its last flight over the Alps from Mailand to Müchen the plane flew with only two engines, though carrying full load.

Marking On Hotel Roof Directs Airmen

In order to assist the fliers coming to Buffalo, who are not acquainted with the location of Buffalo's Airport, the Hotel Statler in that city has marked its roof. This marking can be seen for several miles in the day time and has already proven a great aid to strangers in the locality. Incidentally,

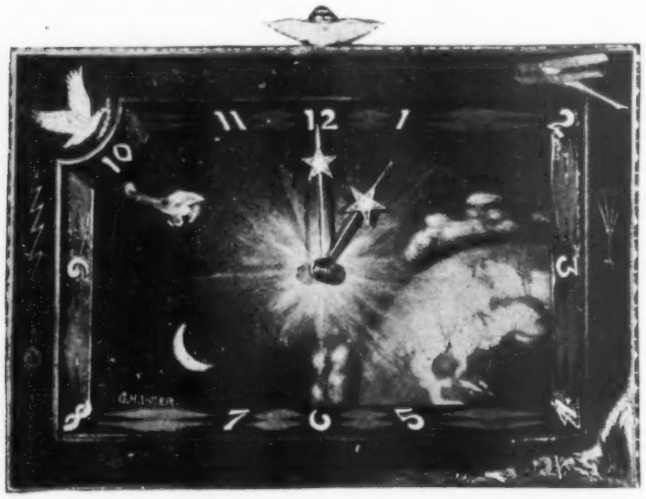
Guide marking on roof of Hotel Statler

the arrow pointing toward the Airport parallels a street which runs straight out past the field and gives the flier a double check on his location, should visibility conditions be bad. The sign was put on the roof through the cooperation of E. C. Green, manager of the hotel, Richard Collision, business promotion manager for the hotel and Lieut. E. M. Ronne, manager Buffalo Airport.

A. C. C. Dinner in Honor of Lindbergh

Fifteen hundred guests attended a Dinner in honor of Col. Charles A. Lindbergh in recognition of his successful flight from New York to Paris. The Aeronautical Chamber of Commerce of America gave the Dinner and it proved to be one of the largest and most successful aeronautical meetings ever held.

Col. Paul Henderson acted as Toastmaster and all speeches except that of Charles Schwab were limited to three minutes, as Colonel Lindbergh had had no sleep for thirty-six hours.



Silver gilt aeronautical clock presented to Mrs. Evangeline Lindbergh by the Aeronautical Chamber of Commerce.

Hon. Trubee F. Davison, Hon. Edward P. Warner, Hon. Wm. P. MacCracken, Jr. and Hon. Irving T. Glover were the other speakers.

Each dinner guest was given a bronze medallion commemorating the flight; each of the guests of honor received a similar medallion in silver while Colonel Lindbergh's was made of gold. Mrs. Evangeline L. Lindbergh, Colonel Lindbergh's mother was presented with a beautiful silver gilt aeronautical clock. Messrs. Donald A. Hall, the designer of the Spirit of St. Louis, Charles A. Lawrance the designer of the Wright Whirlwind engine and Mauriee M. Titterington inventor of the Pioneer Earth Inductor Compass were presented with silver cigar lighters. Porter F. Adams, President of the National Aeronautic Association presented for the organization a copy of the History of Aviation. Robert E. Condon, National President of the Junior Chamber of Commerce presented Colonel Lindbergh with the freedom of the city of fifty municipalities appropriately engraved on fifty vellum resolutions.

Left to right; Hon. Wm. P. MacCracken, Jr., Raymond Orteig, Hon. Trubee F. Davison, Col. Charles A. Lindbergh, Col. Paul Henderson, Charles A. Schwab and Hon. Edward P. Warner.

Three Hundred Pilots Present

The Dinner was attended by three hundred licensed pilots and seven hundred of the others present were connected in some direct manner with the Aeronautical industry. As an hors d'oeuvres a ham sandwich was served. It was wrapped in red, white and blue tissue paper with a card bearing "Repas a la Lindbergh." The arrangements for the dinner were necessarily prepared quickly and the smooth manner in which the exceptionally large attendance was handled was a credit to the Dinner Committee and Oscar of the Waldorf Astoria. Mr. Charles L. Lawrance was chairman of the Dinner Committee. Other members were: Charles H. Colvin, Richard H. Depew, Lester D. Gardner, C. S. Jones, C. M. Keys, Grover Loening, F. B. Rentschler, Chance Vought.

Michigan National Guard Encampment

For the first time in Michigan National Guard history the national guard units will comprise an aviation squadron when they assemble at Grayling, Mich. August 6 for their annual summer encampment.

The 107th Observation squadron, Michigan National Guard the most recent air unit to be added to the national guard air service of the country, has been officially informed it is to attend the training camp.

The squadron has been using eighty acres of the River Rouge Park, municipal parkland, the use of which was donated by the city of Detroit, for its air field. The city also gave the squadron $10,000 with which to erect a six plane steel hangar, with an operations office adjoining.

Four re-built Jennies of recent issue, comprise the present flying equipment. Another Jenny is at Selfridge Field, awaiting delivery.

Several cross-country flights to cities nearby Detroit and a formation flight over the city during the Memorial Day parade were the principal activities of the unit during the past month. Major Floyd E. Evans, is the commanding officer.

Colonel Lindbergh's Decorations

Among the decorations bestowed upon Col. Charles A. Lindbergh in honor of his history making New York to Paris flight are the Distinguished Flying Cross, the French Legion of Honor Cross, the Belgium Order of Leopold, the British Flying Cross, the Lafayette Escadrille medal, the French Aero Club gold medal, the Belgium Aero Club gold medal, the French "Broken Wings" insignia, the medal of the International League of Aviators, the medal of the French Geographical Society, Spain's "Plus Ultra" medal, the Gold Medal of Paris, the Gold Medal of Brussels, the Medal of Valor of New York, the Langley Medal for Aviation, the Hubbard Gold Medal of the National Geographical Society, the Cross of Honor of the United States Flag Association and the medal of New York City.

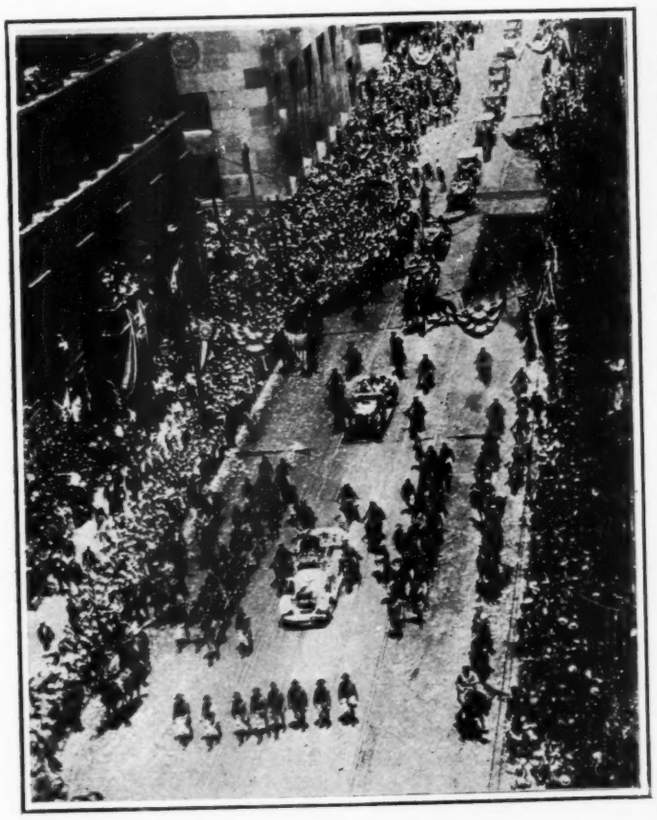
A Correction

In a previous issue of AVIATION the name of the Superintendent of Construction of the Ryan Airlines, Inc., was spelled incorrectly. It should be W. H. Bowlus.

St. Louis Welcomes Lindbergh

More than half a million men, women and children jammed the streets of St. Louis to welcome Col. Charles A. Lindbergh during his seven mile parade through that city on June 18. The trans-Atlantic flier had arrived the evening before in the Spirit of St. Louis but the official welcome to his home town was not held until the following day. The route of march was a bedlam of noises; bombs, sirens, church bells, sixshooters, trumpets, gongs and the shouts of the populace did their part to make known the fact that the hero of the world had returned. Yet Colonel Lindbergh maintained his calm poise throughout the whole affair. He did not smile or wave or give any indication that he understood the demonstration was in the form of a personal tribute to him.

The parade started in the morning from the Congress Hotel, where Colonel Lindbergh and his mother now live. He was greeted there by Governor Samuel A. Baker, United



Colonel Lindbergh's triumphal parade through the streets of St. Louis.

States Senator Harry B. Hawes, Secretary of War Dwight F. Davis and the Committee of Reception. A giant camera on stilts twenty feet high photographed him in the courtyard of the hotel with the entire committee.

Fifteen thousand people in front of the hotel cheered the city's guest as he made his way with Mayor Miller to his flower-decked automobile. Rain clouds, just breaking up, were moving overhead, casting great shadows. Three large army dirigibles, which had been parked in the sky, loafed over the head of the column, occasionally eclipsing the sun.

The sabres of a column of mounted policemen leaped from their scabbards, causing some nervous stepping by their horses, not wholly broken to cavalry exercises. With a scream of sirens and dense clouds of blue smoke, a double column of motorcycle policemen got under way and the parade started down Lindell Avenue.

After a triumphal procession through the residential and business sections of St. Louis the parade finally ended at the Hotel Coronado where Colonel Lindbergh was entertained at a private luncheon. Among those in attendance were H. H. Knight, Thomas N. Dysart, Harold M. Bixby and others of his backers, Governor Baker, Mayor Miller, Senator Hawes and Secretary of War Davis.

After the luncheon the city's guest went to Sportsman's Park, where he assisted in the ceremony of raising the World's championship flag won last Fall by the St. Louis Cardinals. On behalf of St. Louis fans he presented to each Cardinal a ring.

John A. Heydler, president of the National League, presented to Colonel Lindbergh a gold combination airplane and baseball, which also has the virtue of being a life pass to all National League games.

Guest of Honor at Dinner

He was the guest of honor in the evening at a dinner given by 1,300 prominent citizens of St. Louis and Missouri. The keys of the city were presented to him in a gold box with a scroll of welcome which said:

"The City of St. Louis and all her people unite in doing honor to Colonel Charles A. Lindbergh on the occasion of his return to his home city after the courageous non-stop aerial flight (May 20-21, 1927) from New York City to Paris, France, accomplished by him alone with his aeroplane, the Spirit of St. Louis, and they extend him a most cordial welcome home, in recognition of both his splendid achievement and also his high personal qualities, which have won for him the acclaim of the civilized world. And during the welcome home celebration his plane, the Spirit of St. Louis, rests enshrined in Forest Park, for the devoted view of his people."

On the next day Colonel Lindbergh went aloft in his New York to Paris plane and gave the thousands on the ground, who were watching him, a thrilling exhibition of his piloting ability.

Twice Commissioned a Colonel

Upon his return to the ground, he was given a commission as Colonel, Air Corps Reserve by Secretary of War Davis, who during the presentation praised the ocean flier for his history making achievement and superb conduct. Governor Baker also presented Lindbergh with a commission as Colonel in the air service of the Missouri National Guard.

After the presentations Colonel Lindbergh addressed the throng, thanking them for the reception and asking that each and all cooperate to make St. Louis the air center of the United States.

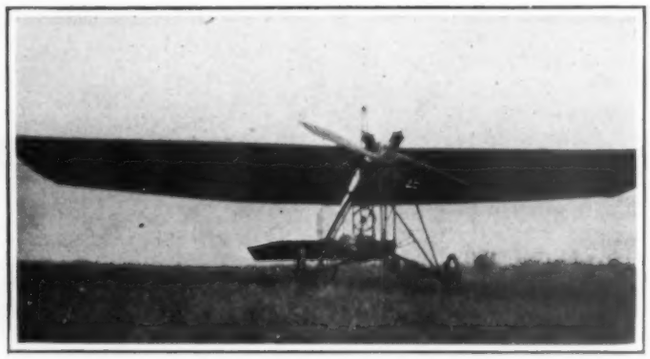
(P & A)

Miss K. Bokukeigen, Korean girl aviator who participated in the altitude tests for women held recently at the Kasumigaura Aviation Field, Japan.

Giuseppe M. Bellanca Has Been Designing Successful Airplanes Since 1908

(*Cont. from page* 1435)

stead of rectangular, the total area was reduced to 272 ft. The total weight loaded (including five passengers) was 3,230 lb. Due to the increased power of the Wright Whirlwind the performance was much better than that of the C. F., the top speed being 135 m.p.h. with a useful load of 1,573 lb. made up of the pilot, fuel, and a pay load of 1,000 lb. The machine took off with a pay load of 1,508 lb. in 16 sec., the length of run being only 750 ft. At sea level the climb was



A six cylinder Anzani monoplane completed early in 1912 by G. M. Bellanca.

1,000 ft. per min. This plane again secured first in efficiency in the Aviation Town and Country Club of Detroit Race at the International Air Races held in Oct. 1925 at Mitchel Field, L. I. It scored points which were far above its nearest competitor in this section of the contest.

In 1926 a second model, very similar to the one just described, was built. The W-B 2 as it was called, is the plane that flew to Germany. The chief difference between this model and the first Wright-Bellanca plane is in the landing gear, which is of conventional design, the "trousers" being omitted. One or two changes in the cabin arrangement were made, improving the pilot's already excellent vision.

The W-B 2 was entered in the National Air Races at Philadelphia last year where it won the efficiency race of the Aviation Town and Country Club of Detroit Trophy scoring 678.5 points against 426.9 of its nearest competitor, Walter Beach in a Travel Air. This was the third Bellanca plane to win this race. In another race for the Detroit News Air Transport Trophy a Wright-Bellanca took first place for the second time, having also won it at Mitchel Field in 1926.

Bellanca had some other entries in the races last year. Clarence Chamberlin entered the competition for the Aero Club of Pennsylvania Trophy in an old 1919 model Bellanca C. E. Biplane, powered with a 60 h.p. Anzani engine. Unluckily it broke a strut on the landing chassis just before the start. By the start of the Precision Landing Contest Chamberlin had the strut well enough patched with a board and some rope to win a third place. In the Race for the Scientific American Trophy Chamberlin again took a third place. He was competing against planes of modern design in an old Bellanca C. E. tractor biplane, powered with an Anzani engine.

To add to this list of admirable performances this same Wright-Bellanca W-B 2 was prepared for an endurance flight in which it hoped to break the existant record of 45 hr. 11 min. 59 sec. established by Drouhin and Landry at Etampes-Chartes, France in Aug. 1925. On the endurance test the same Wright Whirlwind engine was used. The engine and plane had, in fact, done approximately 20,000 mi. before the endurance test. It had been used by the Wright Company early this year on a test flight from New York to Washington with a view to obtain a figure on the cost of operation for comparison purposes.

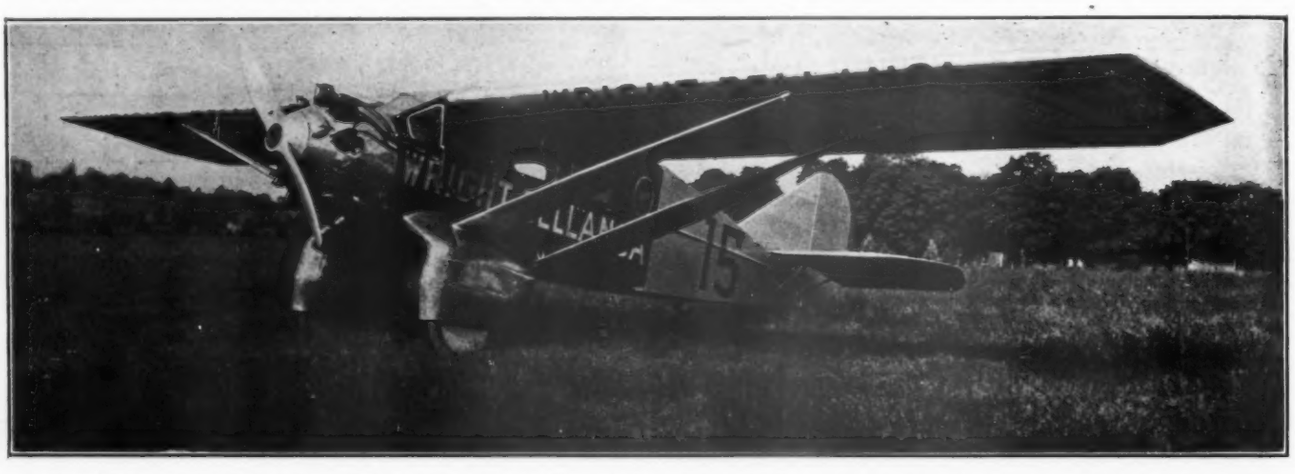
The climax of these remarkable performances came a few weeks ago when the W-B 2, now the "Columbia", was flown across the Atlantic, breaking the World's distance record in admirable time.

N.A.C.A. Publishes Radiator Report

The National Advisory Committee for Aeronautics has published report No. 261 on the Resistance and Cooling of Various Radiators by R. H. Smith. The report combines the wind-tunnel results of radiator tests made at the Navy Aerodynamic Laboratory in Washington during the Summers of 1921, 1925, and 1926, and submitted for publication to the National Advisory Committee for Aeronautics, November, 1926. In all thirteen radiators of various types and capacities were given complete tests for figure of merit. Twelve of these were tested for resistance to water flow and a fourteenth radiator was tested for air resistance alone, its heat dissipating capacity being known. All the tests were conducted in the eight by eight foot tunnel, or in its four by eight foot restriction, by R. H. Smith and under conditions as nearly the same as possible. That is to say, as far as possible the general arrangement and condition of the apparatus, the observation intervals, the ratio of water flow per unit of cooling surface, the different temperatures, and the air speeds were the same for all.

The figure of merit, which is the final object of the tests, diminishes continuously with the increase of velocity. For the cartridge core types the figure of merit decreases roughly with the increase of the velocity squared, while for the wing radiator types it decreases nearly with the increase of the velocity. In the case of the cartridge core types the short tube radiators have greatest merit at low speeds, the long ones at high speeds.

Copies of Report No. 261 may be procured from the National Advisory Committee for Aeronautics, Washington, D. C



The Wright-Bellanca cabin plane. The novel form of cantilever undercarriage with its very clean and robust construction, is clearly shown.

Wright Whirlwinds Have Played Important Parts in Making Aeronautical History

(*Cont. from page* 1433)

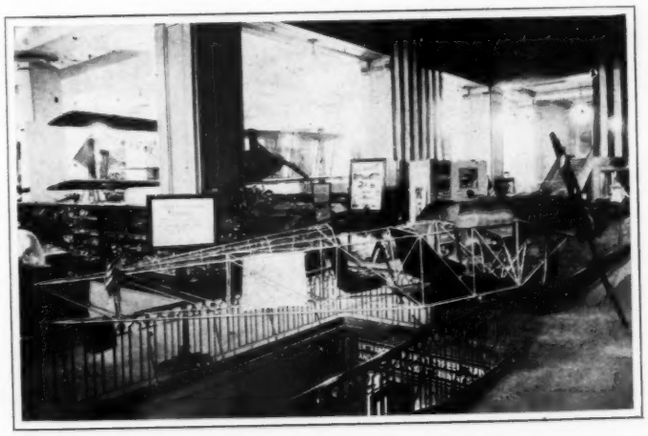
Whirlwind engines. Recent reports state that two German pilots contemplating a crossing from Germany to the United States are installing Wright Whirlwind engines in their plane.

In the United States and Canada Wright Whirlwind engined planes flew 1,750,000 mi. in safety in commercial planes during 1926. There are seventeen commercial companies in the United States, Canada and Alaska that are using Whirlwind engines. Whirlwinds have been selected as the power plant on eleven contract air mail routes in the United States, as well as for air mail routes in Alaska, Canada, and Peru. They are being used for survey work, dusting and practically every place where airplanes are used. Over 271 commercial Whirlwinds have been delivered to date including the Whirlwinds bought by the U. S. Army and Navy over 1000 Whirlwinds have been sold to date.

Department Store Holds Aircraft Show

A rather remarkable display of modern aircraft construction has been on exhibition during the month at the Gimbel Brothers' department store in Philadelphia. This exhibition grew out of the tremendous public interest aroused by Colonel Lindbergh's flight, and began with a window showing a Wright engine and several details of wing and fuselage construction. A crowd surrounded this window from early morning to late at night, and suggested a further extension of the display.

Three truck loads of materials were therefore brought in from the factory of Pitcairn Aircraft, Inc., at Bryn Athyn, and about three thousand square feet of space in the new store of Gimbel Brothers was turned over to an exhibition of the building of a modern airplane. A complete Pitcairn Orowing was assembled in the store, and three skeleton fuselages in different stages of completion, together with such units as tail assembly, dual control, undercarriage, etc., were appropriately mounted in the aisles. Materials in all stages



View of the aircraft show held in the Gimbel Brothers department store, Philadelphia.

of fabrication were shown, together with test demonstrations of wing-rib strength, examples of finishing, instruments, accessories, and flying equipment. Numerous photographs were mounted on screens, and large-sized sketches of the Ryan monoplane, and pictures relating to the Lindbergh flight were displayed. The Wright engine and two OX engines were mounted on stands for close inspection. The exhibit was further rounded out by a display of B. B. T. lighting equipment, and a number of aerial photos by Aero Service Corp. Literature was provided for distribution, and an attendant was on duty throughout the day to answer questions.

The Gimbel Company cooperated heartily with the educational purpose of the display by running large advertisements, distributing posters, and the use of their radio station. Officials of the store have estimated that over one hundred thousand visitors saw the display during the three weeks it has been in place. This interest is not casual but indicates a close and intensive interest on the part of the public. The attendants have been giving a practically continuous lecture throughout the day to groups that have given keen attention to details of construction and operation.

An interesting contrast is given by the collection of photos illustrating the first flight from New York to Philadelphia in competition for the Gimbel Trophy of $5000. A bulletin board on which were posted stories and pictures illustrating the day's news in aviation also proved very popular with the visitors. Direct results from the exhibit have been shown in the very large number of inquiries received relating to Pitcairn Flying School and Pitcairn planes, and the display has demonstrated conclusively the definite turning of public attention to the future of commercial aviation.

Commercial Aviation Values Discussed

The First National Commercial Aviation Conference was held in St. Joseph, Mo., June 6-7, and was attended by representatives of the industry, government officials, and military and civilian fliers from all parts of the country. Porter H. Adams, president of the National Aeronautic Association, presided, having been introduced after the meeting was called to order at 10 a.m. by Carl H. Wolfley, vice-president of the association, and after an address of welcome had been given by Mayor Louis V. Stigall.

F. Trubee Davison, Assistant Secretary of War for Aviation, arrived for the conference in a three-engined Fokker plane. Secretary Davison flew from Omaha. Those composing his party were Porter H. Adams, J. H. Adamson, assistant to Secretary Davison; Peter J. Brady, of New York; Capt. R. G. Erwin; Lieut. Lester J. Maitland, the pilot, and Serg. R. W. Hooe, the mechanic.

Conference Primarily Educational

The Stanolind, the ten-passenger Ford plane, of the Standard Oil Company of Indiana, flew from Chicago, leaving there at 7:55 a.m. and arriving at the Rosecrans Municipal Air Field at 12:15 p.m. This delegation to the conference comprised: Charles H. Wagner, of South Bend; E. F. Buckmaster; Ray Ireland, Thomas Wolfe and G. M. Osborne, the last four of Chicago.

In opening the conference, Mr. Adams stated that the purpose of the conference was primarily educational. He said it was not called for the discussion of technical matters, but for the purpose of bringing the value of commercial aviation to the attention of the public.

William P. MacCracken, Jr., Assistant Secretary of the Department of Commerce for Aeronautics in his address summed up what the United States had actually accomplished in the development of aviation. He said that lines are now lighted for night flying from Chicago to Cheyenne, New York to Boston and Chicago to St. Louis. The Chicago-St. Joseph-Dallas line is being equipped for night flying at the Dallas and Chicago points. He enumerated the amount of mail, express and freight that is being carried and stated that crop dusting, originated in this country, had extended to many countries of the World. Secretary MacCracken, in closing, made a strong appeal for the increased use of the air mail.

Served Double Purpose

Military aviation, for its eventual effectiveness in a large emergency, depends upon the support it can get from a virile and modern aircraft industry and an air trained civilian personnel, were the opening statements of Secretary Davison's address. Without such support, he said, military aviation is seriously handicapped. Declaring that the Army Air Corps served two purposes, first as a highly trained force ready for immediate action, and second as a nucleus which can be expected to meet war conditions, he said that in order that this principle of preparedness may be effective, there

must be back of the military organizations a well trained industrial reserve, ready to cooperate. Secretary Davison said that from the Army standpoint, commercial aviation is as necessary as steamships, railroads and automobiles and that the more done to expedite the growth of commercial aviation, the more will the air reserve of the country be strengthened.

Edward P. Warner, Assistant Secretary of the Navy for Aeronautics, struck an optimistic note in his review of American accomplishments in the field of aviation. He said that there is nothing fundamentally wrong or lacking either in the Army, Navy or commercial fields. The country in general has made equally as rapid progress in the development of aviation as any foreign country in recent years.

Roos Appointed Chairman

The afternoon session began with a talk on "The N. A. A. and its Relation to Commercial Aviation", by Porter H. Adams. This was followed by an address by Congressman Charles L. Faust on local aviation problems. Five minute talks were then given by governors and officers of the National Aeronautic Association and other delegates.

Victor Roos, of Omaha, was appointed chairman of the committee on permanent organization, the other members being: George B. Christian, of New York; R. R. Clark, St. Joseph; Edgar Tobin, San Antonio; W. T. Ashcraft, Oklahoma City; Miss Katherine Stinson, Santa Fe; James Cox, St. Joseph; Adj. Gen. William H. Kershner, Indianapolis, and C. M. Knox, Hartford.

The morning of the second day was devoted to receiving committee reports and the formation of a permanent conference organization. Addresses by A. J. Weaver on "River Navigation and its Relation to Aircraft" and other delegates to the conference were given.

The closing feature of the conference was a trip of inspection to Rosecrans aviation field and an inspection of aircraft exhibits.

Plans Berlin-New York-Frisco Flight

According to a report from Berlin a German Lufthansa pilot, Koennecke, intends to fly a three-engine Junker plane from Berlin to San Francisco, with a short halt in New York.

Koennecke hopes to hop off the latter part of July, accompanied by a radio operator and two passengers—unnamed brothers who are financing the undertaking.

An all-metal monoplane which was fitted for twelve passengers will be remodeled and the passenger space will be taken by gasoline tanks. This change will allow the carrying of sufficient fuel for seventy hours without overtaxing the plane's lifting power.

Two Wright engines developing 200 hp. each are to be installed with a centre engine of a more powerful type. The plane's radio equipment will consist of a short wave sender capable of being heard more than half the distance across the Atlantic.

The pilot has announced that he will fly the southern route, via the Azores. The plane will also be equipped with the latest nautical instruments. It is believed that an average speed of 140 m.p.h. can be maintained for the entire journey.

Plane Used in Towing Glider

An experiment in starting glider planes by towing was recently carried out successfully at the Cassell aviation field in Germany.

The 'glider' pilot attached his engineless plane to an ordinary airplane with a rope having a quick release device at each end, and allowed himself to be towed to a certain height, when he loosened the tow line. He then was able to carry out the usual glider feats and land on the aviation field.

THE RECORD-BREAKING BELLANCA MONOPLANE
Powered with Wright "Whirlwind" 225 h.p. Engine
Equipped with
SCINTILLA
Aircraft Magnetos
SCINTILLA MAGNETO COMPANY, INC.
Contractors to the U. S. Army and Navy. SIDNEY, NEW YORK

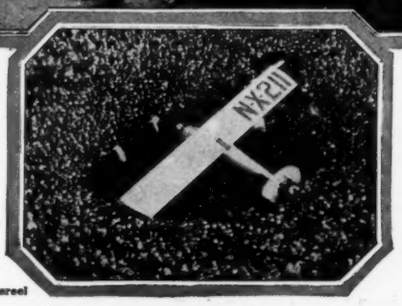
COLONEL CHARLES LINDBERGH

Times Wide World

Lindbergh preparing to hop off for Paris in his Valsparred Ryan plane.

P. & A. Photos

Our unofficial Ambassador to France about to pay his respects to Mme. Nungesser.



Inter. Newsreel

Lindbergh lands at Croyden Airdrome where Londoners give him a tumultuous welcome.

All fly in Valsparred Planes—

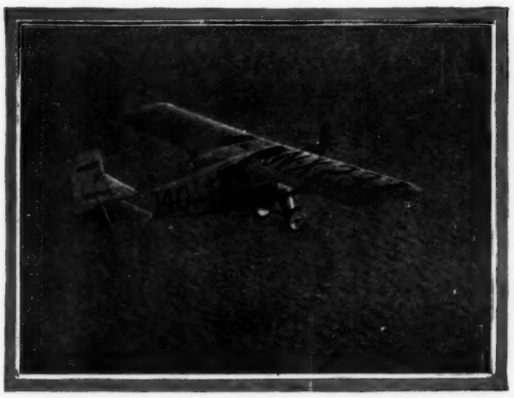
LINDBERGH, CHAMBERLIN, BYRD

ON the wings of the wind they flew—through storm and fog, over a wilderness of sea—to magnificent new achievements.

Others may duplicate their feats, but none can dim the renown these pioneers of the air have won.

That Valspar and Nitro-Valspar were chosen for finishing all three planes is not a mere coincidence; it is a verdict.

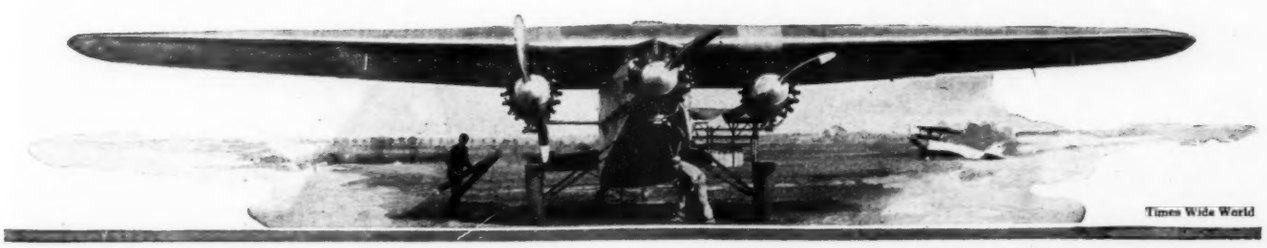
VALENTINE'S
VALSPAR
The Varnish That Won't Turn White



Chamberlin and Levine in their Valsparred Bellanca monoplane winging toward Germany.

P. & A. Photo

Byrd's giant Fokker is Valsparred from stem to stern.



Times Wide World

Side Slips

By ROBERT R. OSBORN

Having just returned from the Lindbergh celebration at Roosevelt Field we can report that most of the citizens in this section of the country are still enthusiastically in favor of Colonel Lindbergh for our next president. One of the peculiar things about his home-coming celebration is that the toughest and hardest-boiled old fliers are as anxious to get a look at him, shake hands, or get an autograph, as is the man in the street. When he landed at Mitchel Field from Washington a couple of mornings ago, we saw six or seven badly winded colonels and majors who were running a half mile to get a look at him before he climbed into the amphibian to be taken to New York Bay.

• • • •

Now that this young flier has made himself so valuable and so highly regarded by a world of people, we think he should take fewer risks and chances than he does. The other day, for instance, he spent a whole morning roaming around Long Island in Casey Jones' Ford sedan. This crate is equipped with four "golden chairs", is completely out of control most of the time, and would be a terribe thing in case of a forced landing.

• • • •

A good example of the accuracy with which aeronautical news is written up by the papers, is the description in a New York evening paper of Lindbergh's landing at Mitchel Field, L. I., evidently written by an editor who had not been at the field. In a full column, description of the convoying fleet of planes, Lindbergh's pursuit plane, the field and the maneuvers, none of which even approached the truth, was the statement "and as he laughed back a relieved greeting, he was hurried to the water's edge, put over into a flying boat and hurried away." Not only is there no water's edge anywhere near Mitchel Field but there isn't any moisture nearer than a famous speakeasy about a mile away.

• • • •

C. G. Grey, plain-speaking and interesting editor of *The Aeroplane* of London, regrets in a recent issue that Lindbergh could not have landed on a few of the "congenital idiots" who over-ran his landing space at Croydon before he could set the plane down.

• • • •

Present tendencies for aeronautical news in the papers seem to require an element of mystery to be added as an additional attraction. If this is to keep up we may very well expect it to be carried to its logical conclusion,—"June 27, 1928. Somewhere in the United States. Sometime this year, or possibly never, the Silver-Masked Aviator and his navigator, 'The Man in the Iron Helmet', will fly some plane from Somewhere to Somewhere else. They would not say anything further regarding their plans, and it is possible that the flight may be postponed. The name of their backer is not known and the identities of the fliers will never be revealed."

Lindbergh's Escort Sets Speed Record

A new speed record between New York and Washington was established on June 16 by Col. Charles A. Lindbergh's famous military escort, the pursuit group from Selfridge Field, Michigan, when it flew the distance in 1 hr. 45 min.

The group, numbering nineteen speedy Curtiss single seater pursuit planes, under the command of Major Thomas G. Lamphier, took off from Mitchel Field, Long Island, at 10 a. m., and arrived over Washington at 11:45.

"LATA" Balsa Aids BELLANCA RECORD

Like American heroes "LATA" Balsa Wood in the past few weeks has played its part in making aviation history. In the second spectacular trans-atlantic flight with Clarence Chamberlin putting the now historic BELLANCA monoplane through its record tests to success, "LATA" Balsa Wood provided help.

The fairings of the BELLANCA monoplane are constructed of "LATA" Balsa, an aeroplane wood accepted by practically every well known manufacturer because of its adaptability. Its lightness is most essential while its sturdy, enduring qualities provide greater safety.

We are in a position to make immediate shipments in standard aeroplane dimensions. Write for our booklet.

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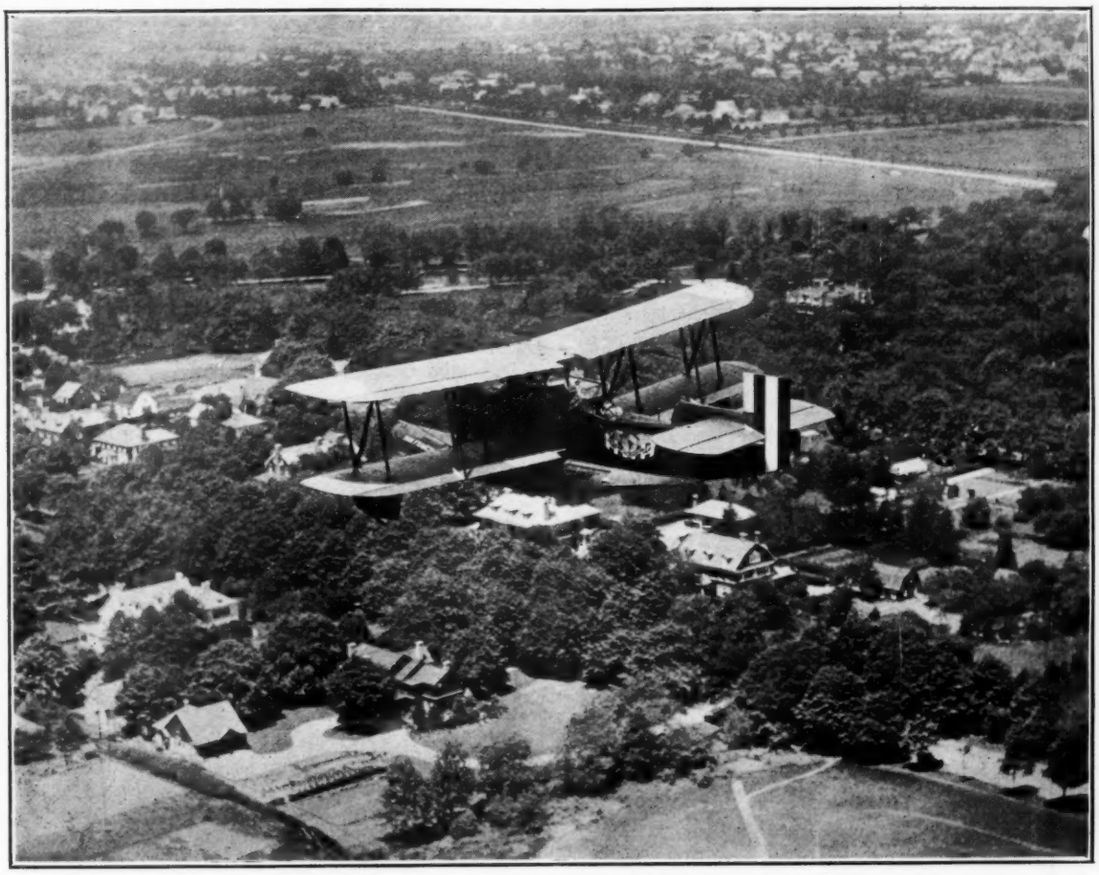

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Colonel Lindbergh, Captain Eaker, and the "San Francisco"

A NEW partnership organized for the purpose of bringing Colonel Lindbergh from Mitchel Field to New York Harbor. It is interesting to learn that altho he had spanned the Atlantic and had flown thousands of hours, the landing in the harbor was the first water landing that Colonel Lindbergh had ever made.

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FOREIGN AERONAUTICAL NEWS NOTES

By Special Arrangement with the Automotive and Transportation Divisions, Bureau of Foreign and Domestic Commerce

Aviation in India

A statement on the policy proposed by the Government of India for adoption in regard to certain items of expenditure in connection with the advancement of civil aviation in India was recently issued by the Government of India at Delhi.

According to information contained in the "Capital" of Feb. 17, 1927, a local commercial publication, the Government of India is assisting the Imperial airship service to the following extent:

(a) They have acquired a site for an airship base at Karachi and have agreed to leave it free of rent to the British Government. This arrangement which involved an expenditure of $5,400,000 for land, having been approved by the Standing Finance Committee in March, 1925, the bulk of the necessary provisions was voted in a supplementary estimate of 1925-1926, the balance being met by re-appropriation in 1926-1927.

(b) They are making a grant-in-aid to the airship service of $144,000, this representing approximately the amount to be paid by the British Government in custom duties on the materials which are being imported by them into India for construction of the base, including the airship hangar.

The Air Board has strongly recommended the inauguration of a service between Calcutta and Rangoon, and the Government of India is in agreement with the Board that this is a service which offers the best prospects of early success and is prepared to adopt the recommendations made regarding it. These are, first, that the principle of granting a subsidy during the early years of operations should be accepted, the amount of such subsidy to be decided when further examination has been made of the problem in all its bearings, and that any company formed to operate the service should be registered in India with rupee capital and that the company should be required to afford training and opportunities for employment of Indians. The Government entertains hope that in the near future it will be in a position to call for tenders for the operation of the service.

The Air Board's recommendation for the adoption of a more progressive policy in aviation including the training and employment of Indian pilots and personnel, is supported by the Indian Government.

Expansion of Marseilles

Important plans have been made for future expansion of the air facilities of Marseilles, which is the chief airport of the Mediterranean basin and one of the principal centers of commercial aviation in Europe.

Prior to 1926, only the Marseilles-Perpignan and Antibes-Ajaccio lines were in operation from Marseilles. In that year, the Paris-Marseilles route was created. The current year has added the Marseilles-Algiers line of the Compagnie Aerienne Marseilles-Algerie and next year it is planned to inaugurate a seaplane route from Marseilles to the eastern Mediterranean. In connection with this enterprise, the sum of $59,400 was appropriated in the Government's 1927 budget to defray the expense of experimental flights, which have been started. The line has not yet been assigned to an operating company. Consideration is being given a line from Marseilles to Nice especially for tourists, with a possible extension later to Genoa. Trial flights as far as Nice were held in April.

The chief development recently was a line between Marseilles and Algiers. Its organization is an interesting example of the close liaison existing between the older companies and any new aviation venture in France. The operating company, capitalized at approximately $198,000, is associated with the Air-Union and Latecoere interests. No competition exists between the various lines in France, where the Government pays the major cost of commercial aviation through a system of subsidies. Thus the new line, starting out from Marseilles, is supported by the two companies which serve that city from other directions.

Officers of the Marseilles-Algiers line expect a remunerative traffic in mail matter. It is estimated that 50,000,000 letters annually are handled by steamer between the two cities, and the fast airline should take a large portion of the total. With a flying time of five hours, telegrams can be delivered almost as rapidly as by submarine cable, and this traffic is also expected to be attracted to the airline.

The route followed will be over the Balearic Islands, but the company has not been able to secure permission from the Spanish government to make this a stopping point. Six seaplanes, including "Meteore" and "LaT 21" (Latecoere) types, comprise the flying equipment of the company.

Marseilles, like Paris and several other cities, has its flying field at considerable distance from the city. All of the commercial aviation lines have their base at the Etang de Berre, a lake about twenty miles northwest of the city. This location offers excellent facilities for both land and seaplanes; a wide and smooth expanse of water, well-sheltered on all sides and broad fields.

Land planes use the airdrome of Marignane, on the eastern shore of the Etang de Berre, as their base. Seaplanes alight upon or take off from the water of the lake, and are towed to their hangars along the shore. On the northwestern shore is the naval aviation center of Istres, the largest in France.

It is expected in France that as Marseilles becomes the largest maritime port of France, because of its position as contact-point with the French colonies, it may become of constantly greater importance as an airport. In 1928, there may be another line directed toward the French possessions in Asia, via the eastern Mediterranean. Later there may be a line running south across the African continent, touching the French possessions on the Congo and ending in Madagascar. Two trial voyages in recent months have shown the feasibility of the entire route, with either land planes or seaplanes.

Public interest in aviation activities in the South of France is evidenced by the First International Aviation and Navigation Exposition, which will be held at Marseilles from June 25 to July 25, 1927, under the auspices of the Societe Marseillaise de Navigation Aerienne. Several foreign nations will take part, including England, Italy, and possibly Germany. American aviation interests have also been invited to send exhibits.

Increase In English Air Mail

During 1926, 17,000 lb. of letters were carried from England by airplanes, according to a report made by the British Postmaster General. Outgoing air mail traffic during 1926 showed an increase of 8 per cent over 1925. The mails for Paris, Switzerland, Belgium, Holland, Scandinavia and the East Baltic countries and Russia all showed substantial increases. On the other hand, there was a decrease in air mails for Morocco and Germany. The latter decrease was partly due to the removal of British troops from Cologne.

AIRPORTS AND AIRWAYS

Tri-City Airport, N. C.

A new center of activity on the air-map of America was created with the inauguration of the Tri-City Airport on May 29. It is located at Friendship, N. C., midway between the towns of Greensboro, High Point, and Winston-Salem. This is a municipal field provided as a stop on the new air-mail line from New York to Atlanta, which will go into operation this Fall. The field is leased to Pitcairn Aviation of North Carolina, Inc., a branch of Pitcairn Aviation, Inc., which will operate the new air-mail route.

Five planes left Pitcairn Field, Pennsylvania, for the dedication ceremonies, piloted by Harold F. Pitcairn, James G. Ray, Ray Rafus, Sidney Malloy, and Sterling Smith, and carrying a ground crew and mechanics. The planes arrived at the airport late on the Friday evening preceding the dedication, and were joined by three Army planes from Langley Field, three from Fort Bragg, and two commercial planes. The program of dedication was carried through without untoward incident other than some delay through adverse weather, and a crowd estimated at ten thousand thronged the field through most of the day.

The ceremonies opened with an air tour over the three cities interested in the airport, with local officials as the first passengers. Three of the Pitcairn planes which are to be stationed at the new field on passenger service were christened with the names of "Miss Greensboro," "Miss Winston-Salem," and "Miss High Point," and thereupon went into active service carrying the first rush of air passengers. A series of races, stunts, bubble-chasing and other entertainments was staged by the visiting planes, and appropriate trophies awarded by the local Chambers of Commerce and business interests. A banquet to those who have been actively interested in the development of the airport closed the ceremonies.

Pitcairn Aviation was represented by Harold F. Pitcairn, president of the company; Geoffrey S. Cholds, vice-president and general manager; and James G. Ray, operations manager.

Several hundred passengers were carried during the first three days, and it is probable that four planes will be stationed here on regular duty. The pilot in charge is Ray Rafus, transferred from the company's main field, and he is assisted by Sidney Malloy, a citizen of Greensboro and an experienced pilot. The new field has already proved most satisfactory from the pilot's point of view. It is excellently located for landing and take-off, is equi-distant from the three cities served, and is connected with them by excellent roads. Large buildings in the nearby towns carry arrows painted on the roofs directing visiting pilots to the field. Hangars have been erected by the Pitcairn Company, along the lines that have been tested out in their own home field, and adequate shops are attached.

The new field should prove an important link in the north and south air service, and will become increasingly active with the inauguration of the air-mail route. The field has been made possible largely through the enthusiasm and

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AIRCRAFT CORD

interest of the cities it serves, and it is quite evident that the southern section of the Atlantic seaboard is keenly alive to the immediate future of commercial aviation.

Mason City, Iowa

This city now has an airport. Clausen-Worden Post of the American Legion has provided a fine eighty acre tract of land for this purpose. The Post has leased the field for two years and will dedicate it to general commercial use.

Pitcairn Field, Pa.

It is probably a matter of general experience that the recent furore in aviation has led to greatly increased business at public flying fields, and in the case of Pitcairn Field other elements have conspired to break all records in passenger business. The opening of new Pitcairn operations, the display of Pitcairn material at Gimbel Brothers store in Philadelphia, the activities of the Flying School, and the increasing interest in the air mail route to be flown by the company, have brought big crowds and more passengers than ever.

From May 28 to May 30, the Pitcairn Fleet carried over 1700 passengers. This figure is made up of activities at three fields,—Pitcairn Field at Hallowell, Pa., Hadley Field, near New Brunswick, N. J., and the new Tri-City Airport at Greensboro, N. C. At the main field on Memorial Day there was rung up a total of 387 passengers, the largest figure to date in the history of Pitcairn operations. This record was particularly gratifying in view of the fact that five planes and their pilots and crew were away at the opening of the Greensboro Field, but the balance of the operations force, under Ben Faulkner as manager-in-charge, put their best efforts into the building up of a record secre.

Orowings do most of the work at the Pitcairn Fields, but the new Fleetwing is making a lot of friends in its sundry excursions around the country. A production schedule for the new Fleetwing is under way.

Three Pitcairn planes made flights to Washington to enable Philadelphia newspapers to cover the Lindbergh reception. Additions have been made to the staff to cover the increased activities. Ray Rafus, who has been with the company from early days, is now operations manager of the Pitcairn service at the Tri-City Airport. Jim Ray is tolerably busy these days, trying to be in five places at once, and as usual getting away with it.

Duluth-Superior, Minn.

By H. A. Lindbergh

Duluth, the head of the Lakes port is getting in step with the rest of the progressive communities in the country, that are interested in the development of aviation.

The field on which hangars have recenly been erected, will serve the two cities. It is located near the bay front of western Superior and is conveniently reached by street car or by the main highway connecting the twin ports.

A. J. Hase, president of the Arrowhead Airways, Inc., will be in charge, with Eddie Middagh as flight pilot.

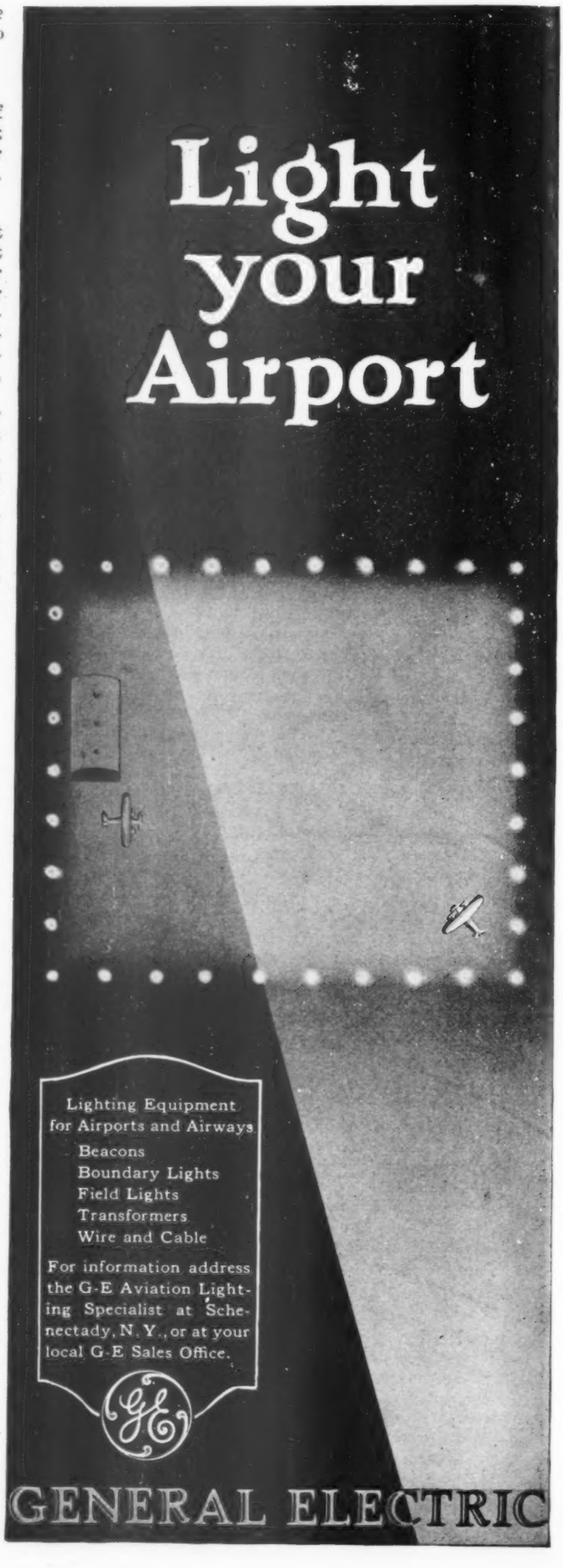
Passenger service to the twin cities has been inaugurated and student instruction together with the usual hopping of passengers will be performed.

As this section is a popular center for tourists because of the cool Summer climate, those who see America by air will appreciate the increased facilities at their service when in this neighborhood.

Ypsilanti, Mich.

Ypsilanti held a three-day air meet, June 10, 11 and 12, which was attended by thirty thousand people. Perfect weather added to the success of the meet and during the three days five hundred passengers were carried. On the second night of the meet, the Michigan Aircrafters Association joined with the local association in a banquet at the Washtenaw Country Club, which was attended by 150 officials, pilots and visitors from Saginaw, Detroit and Dayton.

A plane, constructed by the students of the Aeronautical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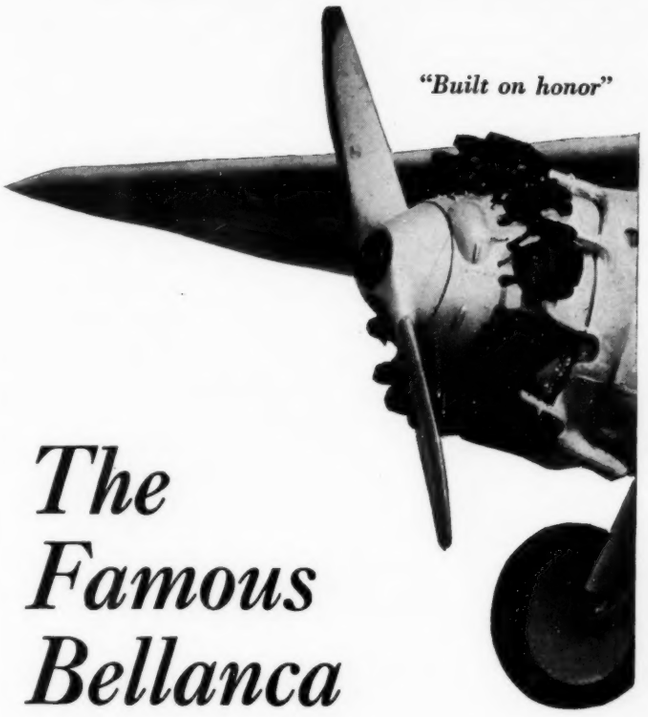

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Engineering class at the University of Michigan was on exhibition during the meet.

The events consisted of a cross country distance race, a cross country speed race, a pony race, a dead stick contest and a speed race. Prizes of from $300. to $25. were given for each contest.

The securing of the property for Ypsilanti Airport was made possible by the organization of a syndicate of thirty people. This group of citizens secured the land, which is located in Pittsburgh township and includes 160 acres in a field which is a half mile square.

The work of developing the field has been cared for by the Ypsilanti Board of Commerce which has fostered the idea from the start.

The erection of a hangar capable of housing four planes was made possible by George C. Handy and John H. Lonskey. The building is 32 ft. by 114 ft. Edward G. Knapp, distributor for the Waco and Ryan planes in the state of Michigan, has contracted for the use of the hangar.

The future of Ypsilanti Airport depends largely upon the citizens of Ypsilanti and Ann Arbor. If these people believe that aviation is a means of transportation which is entitled to the support of all progressive cities, then Ypsilanti Airport may serve these cities as a field to be developed and used in the many phases of aircraft development. The syndicate of men who own the property are hopeful that by another year sufficient interest will have been developed to work out a permanent program of equipping the airport in line with the best information available.

Members of the Ypsilanti Airport Syndicate are: L. J. Arnet, Vincent Arnet, Marie L. Breakey, F. A. Dupont, Paul H. Ehman, Ray Fletcher, John Z. Gault, George E. Geer, F. M. Greenstreet, R. B. Haig, George C. Handy, H T. Hanover, William B. Hatch, J. H. Hopkins, John P. Kirk, William H. Latham, A. E. Lewis, John H. Lonskey, Matt Max, E. A. Mellencamp, John S. Miller, Daniel L. Quirk, Jr., M. M. Read, T. E. Schaible, H. R. Scovill, Florence W. Signor, Joseph H. Thompson, Tracy L. Towner, H. E. Van de Walker, Joseph E. Warner, E. G. Wiedman, and L. T. Wilcox. John H. Lonskey is the Trustee.

Tulsa, Okla.

By Fred L. Foster

Tulsa, "The Oil Capital of the World", has developed into one of the most active air centers in America.

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Commencing with very limited capital he has built steadily and substantially until today the McIntyre Airport, located four and one half miles east of the city, is recognized by fliers the country over, as being one of the most modern and best equipped airports in the country.

The field comprises 127 acres of splendidly located grass land, smooth and well kept, located on one of the main highways leading directly to the heart of the business center. Good inter-urban bus service furnishes visiting fliers with rapid transportation downtown.

A large modern hangar, with a capacity of some twenty planes is located at the west edge of the field within one hundred yards of the highway. A large, well-fitted lounge room with private steel lockers, for use of visiting airmen, is provided adjoining the business offices. A well equipped repair shop adjoins the rear of the hangar. Gasoline pumps

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of repairs is kept on hand and highly trained mechanics are always on duty for prompt service to machines.

A corps of trained pilots is maintained to handle the large cross-country taxi service which Mr. McIntyre has gradually built up and this part of the business has grown to astonishing proportions. Air men who have visited McIntyre Airport have expressed astonishment at the magnitude of the air transport business conducted at this port and it has been frequently said that more commercial flying—flying for strictly business purposes—is done from the McIntyre Airport than from any other privately owned and operated airport in America.

A training school is provided for the training of pilots and two instructors are kept busy training men who have purchased planes for their own use or pilots who expect to go into commercial work. Mr. McIntyre has the agency for the Waco line of planes and has always oversold his quota allowed by the factory. Some fifteen privately owned machines are kept at the field while six service planes, all of modern design, are maintained for cross-country work.

The McIntyre Airport is a splendid object lesson for those who are giving serious consideration to commercial aviation. This business has been built from a very small start to its present proportions entirely from the earnings of the business. Sound business practice is responsible for its substantial development, proving conclusively that there is a sound field for commercial aviation for business men who will give it the same care and attention that would be given to any other commercial undertaking.

The McIntyre Airport is the oldest commercial airport in the state and most modern in its appointment and equipment. It has a complete air service station where one may expect to receive the same service to planes that would be expected by the motorist in a modern automobile garage.

Mr. McIntyre believes that the sound future of commercial aviation is assured and expects to continue to develop his business along sound lines to keep pace with the certain development of commercial air transport.

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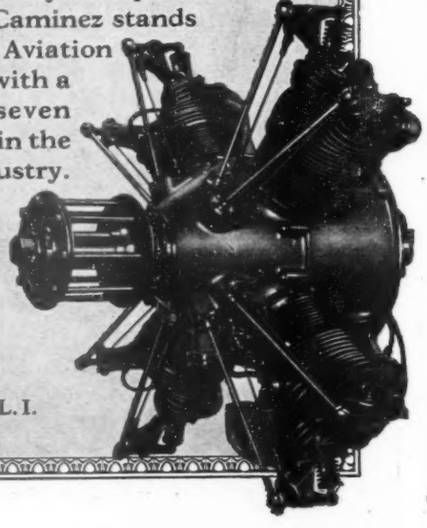

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Lieutenant Holloman is relieved from assignment to the 29th Inf., Fort Benning, and will proceed to Brooks Field.

Sec. Lieut. Kenneth H. Kinsler, Inf., is detailed in the Air Corps. Lieutenant Kinsler is relieved from assignment to the 28th Inf., and from station at Fort Niagara, and will proceed to Brooks Field.

Major George E. A. Reinburg, Air Corps, Fort Omaha, to Washington, D. C., for temporary duty in office of Assistant Chief of Staff. Upon completion of temporary duty, Major Reinburg will proceed to New York City, thence to Berlin, Germany, and upon arrival will take station and report in person to the military attache, American Embassy.

First Lieuts. David Louis Behncke, Forest Park, Ill. and Werner Otto Bunge, Arcadia, Fla., Air Corps Res., to active duty Langley Field, reverting to inactive status June 30.

Sec. Lieut. Henry August Frese, Air Corps Res., San Antonio, to active duty Maxwell Field, reverting to inactive status June 30.

First Lieut. Charles M. Adams, Air Corps (Inf.) is relieved from detail in the Air Corps, 2nd Div., Fort Sam Houston, and is assigned to the 13th Inf., Boston Harbor, Mass.

Major Earl Naiden, Air Corps, Washington Barracks, D. C., relieved from present assignment and duty and is detailed to pursue a course of instruction at the Ecole de Guerre, France, beginning Nov. 1. He will proceed to New York City and sail July 2 for Paris, France.

First Lieut. Edmund P. Gaines, Air Corps, McCook Field, to Garden City, N. Y., to act as Air Corps representative at the Curtiss Aeroplane and Motor Company.

Sec. Lieut. Gregg M. Lindsay, Air Corps, is transferred to the Field Art. Lieutenant Lindsay is relieved from attachment with the 2nd Div. and is assigned to the Field Art. of that division, Fort Sam Houston.

Sec. Lieut. George Richard Geer, Air Corps Res., Auburn, R. I., to active duty Mitchel Field, reverting to inactive status June 30.

First Lieut. Russell Pyles, Air Corps Res., Langley Field, to active duty Aberdeen Proving Ground, reverting to inactive status June 30.

Sec. Lieuts. Reginald Heber, San Diego, Archie Meyer Kelley, Kansas City, Douglas Tracy Kelley, San Diego and Hansford Wesley Pennington, San Antonio, Air Corps Res., to active duty Fort Crockett, reverting to inactive status June 30.

Sec. Lieut. Ford Larimore Fair, Air Corps Res., Continental, Ohio, to active duty Aberdeen Proving Ground, reverting to inactive status June 30.

Sec. Lieut. Harry McK. Roper, Air Corps (Field Art.) is relieved from detail in the Air Corps, Fort Sam Houston, and is assigned to 2nd Div., at that station.

Sec. Lieuts. Eaton Johnson, Maywood, Ill., and James Franklin Walsh, Farmer City, Ill., Air Corps Res., to active duty Bolling Field, reverting to inactive status June 30.

Sec. Lieut. Lee Francis Duncan, Air Corps Res., Braman, Okla., to active duty Fort Riley, reverting to inactive status June 30.

Sec. Lieuts. Leo Conrad Allen, Tacoma, Wentworth Goss, Los Angeles, George Albert Jones, jr., and Archie Ray Loomis, Seattle, to active duty Crissy Field, reverting to inactive status June 30.

First Lieut. Robert Coleman Ashley, Air Corps Res., St. Petersburgh, Fla., to active duty Maxwell Field, reverting to inactive status June 30.

First Lieut. Frederick August Schauss, Air Corps Res., Washington, to active duty Bolling Field, reverting to inactive status June 30.

Navy Air Orders

Lieut. Geo. R. Fairlamb, jr., det. Inspr. of Nav. Aircf., Buffalo, to Gen. Inspr. of Nav. Aircf., Central Dist., McCook Field.

Capt. Geo. S. Hathaway det. Aide & Sqd. Surgeon, Staff Comdr., Spec. Serv., Sqd., to Nav. Hosp., Boston.

Lieut. Bates H. Johnston det. VS Sqd. 1, Aircf. Sqd., Sctg., Flt., to Asst. Inspr. of Nav. Aircf., Buffalo.

Lieut. (jg) Charles S. Alexander det. Torp. & Bomb. Plane Sqd. 1, Aircf. Sqd., Sctg., Flt., to USS Wright.

Lieut. Comdr. Alfred T. Clay det. Nav. War College, Newport, R. I., off. in charge recruiters training school, Nav. Trg. Sta., Nav. Oper. Base, Hampton Roads, Orders April 27 revoked.

Lieut. William D. Thomas det. command VO Sqd. 3 (USS Raleigh) Aircf. Sqd., Sctg. Flt., to Bu. Aero.

Lieut. (jg) Alfred C. Olney, jr. det. VO Sqd. 3 (USS Detroit) Aircf., Sqd., Sctg. Flt., to temp. duty Navy Rifle Team, Wakefield.

Lieut. (jg) Gunnar Jelstrup det. Nav. Hosp., New York, to Nav. Ammun. Dep., Dover, N. J.

Pay Clerk Stanley B. McCune det. Nav. Air Sta., Anacostia, to USS Saratoga.

Lieut. Logan C. Ramsey det. Hydro. Off., Navy Dept., to VT Sqd. Two, Aircf. Sqd., Battle Flt.

Lieut. Barnett T. Talbott det. USS Memphis, to Nav. Air Sta., Anacostia.

Lieut. Comdr. Ralph G. Pennoyer det. Bu. Aero., Navy Dept., to office of Judge Advocate Gen., Navy Dept.

Ch. Mach. Thomas G. Powers det. USS Aroostook, to Off. Inspr., Nav. Aircf., Boeing Airplane Company, Seattle.

Capt. Ernest J. King det. Nav. Air Sta., Pensacola, to command USS Wright.

Lieut. Comdr. Arthur W. Radford det. VO Sqd. 1 (USS Pennsylvania) Aircf. Sqd., Battle Flt., to 11th Nav. Dist, San Diego.

Lieut. George H. DeBaun det. Harvard University, Cambridge, to Nav. Air Sta., Anacostia.

Lieut. William L. Peterson det. VO Sqd. 3 (USS Concord,) Aircf. Sqd., Sctg. Flt., to Nav. Air Sta., Coco Solo, C. Z.

Lieut. Clarence H. Schildhauer det. VS Sqd. 2, Aircf. Sqd., Battle Flt., to Aircf. Sqd., Sctg. Flt.

Lieut. Martin B. Stonstreet det. VS Sqd. 2, Aircf. Sqd., Battle Flt., to Aircf. Sqd., Sctg. Flt.

Lieut. (jg) William P. Davis det. VO Sqd. 6, Aircf. Sqd., Sctg. Flt., Nav. Air Sta., Nav. Oper. Base, Hampton Roads, to USS Oklahoma.

Lieut. (jg) Aaron P. Storrs, 3rd, to continue duty VF Sqd. 6, Aircf. Sqd., Battle Flt.; orders Jan. 31 revoked.

Ens. Thomas J. Kirkland, jr., det. VO Sqd. 6, Aircf. Sqd., Sctg. Flt., to USS Oklahoma.

Ens. Joseph I. Taylor det. VO Sqd. 6, (USS Florida,) Aircf. Sqd., Sctg. Flt., to Nav. Air Sta., Hampton Roads.

Lieut. Guy Fish det. Nav. Air Sta., San Diego, to Nav. Air Sta., Pearl Harbor.

Chief Carp. William H. Hewitt det. Off. Inspr. of Nav. Aircf., Boeing Airplane Company, Seattle.

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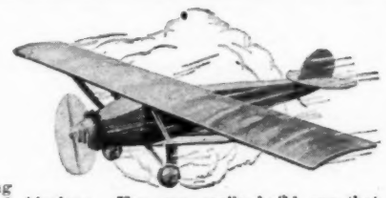

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PUBLISHER'S NEWS LETTER

Owing to the volume of news and the size of the issues of AVIATION recently there have been certain delays for which the publisher expresses regret. The date of issue of any publication is usually variable. Monthlies often appear on the newsstands a week or two before the first of the month which date the issue carries. With weeklies it is customary to publish a few days before the day of the week which is shown on the cover. When, as has happened recently, important news as well as special advertising was received late, there are certain delays that are unavoidable, the publishers are confronted with the choice of omitting articles or having the publication arrive later than usual. The latter course has been selected and it is hoped that the larger issues that have been received by our readers will more than compensate for any disappointment they have had over the late arrival of their papers.

* * * *

The Aeronautical Chamber of Commerce is receiving congratulations from everyone who attended the Dinner given in honor of Col. Lindbergh on June 16, at the Waldorf Astoria. Usually, where the attendance tests the capacity and facilities of a hotel, affairs of this kind have a way of getting out of hand and becoming confused. With every table that the Waldorf Astoria could place on the Ball Room floor and every one of the boxes in the two tiers occupied, the dinner was so carefully planned and organized that every detail was carried out punctually and with perfect order. Thousands of persons gathered outside the hotel to catch a glimpse of Col. Lindbergh but the police arrangements were so complete that there was no confusion. The Dinner Committee made every effort to make it possible for pilots to attend, charging them only half the usual price of the dinner. As a result three hundred came, so that it was probably the largest gathering of pilots ever held in New York. When a dinner of this size and importance is managed so capably, a few words of praise are merited.

* * * *

The great demand for information concerning the prizes that have been offered for long distance flights indicates the number of people who are planning to compete for them. Every day telegrams are received by AVIATION inquiring as to the terms and conditions of various prizes. In order to make this information available to everyone, AVIATION is securing such regulations and will print them as soon as they are formulated. One curious fact is evident. Practically all these prizes are coming from the United States. The other countries of the world have offered prizes for other events, it is true, but the long distance prizes all appear to be centered here in America. The international goodwill stimulated by these flights should bring offers from other countries and probably will, but up to the present they have all been for flights starting or ending in the United States.

* * * *

Now that Col. Lindbergh has been given an opportunity to take a well earned rest the next event will probably be the welcome of Chamberlin and Levine. There will be much speculation as to what form this will take. Whether or not all trans-Atlantic fliers will be acclaimed on their return with the pomp of royalty remains to be seen. Already certain political complications are being discussed and it will be interesting to observe just how the holders of the world's distance record will be greeted. New York, that gave such an unprecedented welcome to Col. Lindbergh will undoubtedly give a wonderful reception to the returning voyagers, but what the rest of the country, particularly Washington, does, will be one of the curious phenomena that has resulted from these flights.

* * * *

By the time this appears Commander Byrd and his companions will probably have made their attempt. They will carry with them the hopes and wishes of everyone. The popularity of Commander Byrd is so general and genuine, not only with the public but among airmen that anything with which he is associated gains immediate respect and confidence. Advance predictions are difficult, but it is not too much to say that when he arrives in Europe, barring no unforeseen mishaps, he will add still further to the goodwill that has been created by these trans-Atlantic flights. He will carry with him the friendship of America embodied in a most delightful officer and gentleman.

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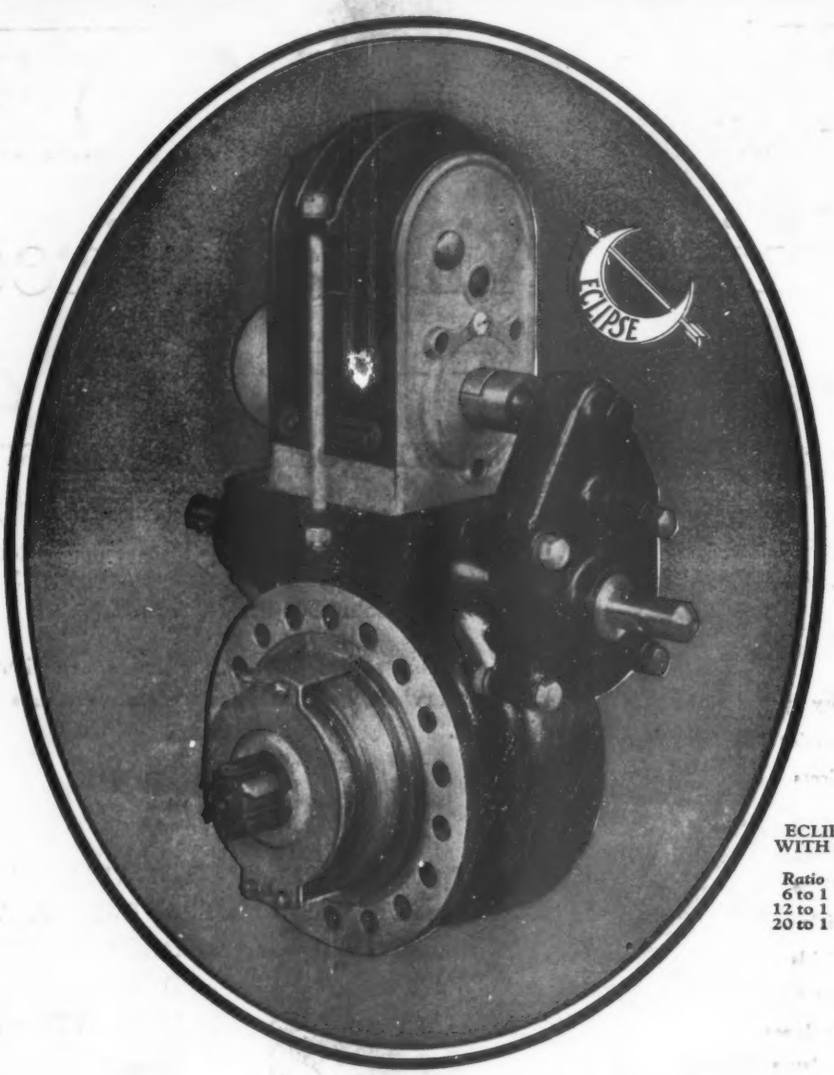

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